VOL. LXVIII., NO. 2709.—SATURDAY, JANUARY 5, 1895.

THE BUILDER

ILLUSTRATIONS.

Monument to Duban at the École des Beaux-Arts, Paris.—M. E. Guillaume, Sculptor; M. Bernier, Architect ..... *Single-Page Photo-Engraving.*
"So Sir Launcelot took Ship and went over to France."—Mediæval Picture by Mr. Patten Wilson ..... *Double-Page Photo-Litho.*
Richmond Palace; a Restoration.—Drawn by Mr. H. W. Brewer ..... *Double-Page Photo-Litho.*
The Abbeys of Great Britain, VIII.; Fountains.—Drawn by Mr. J. A. Slater ..... *Double-Page Ink-Photo.*
Plan of Fountains Abbey.—Measured and Drawn by Mr. J. Arthur Reeve ..... *Double-Page Photo-Litho.*
Whitby Abbey.—Drawn by Mr. J. A. Slater ..... *Double-Page Ink-Photo.*
In the Nave, Milan.—Drawn by Mr. Gerald C. Horsley ..... *Double-Page Ink-Photo.*
A Week's Sketching in Normandy.—By Mr. Arnold Mitchell, F.R.I.B.A. ..... *Extra Large Ink-Photo.*
The New Sorbonne, Paris: Vestibule of Grand Staircase.—M. Nenot, Architect ..... *Double-Page Ink-Photo.*
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*Fountains Abbey.**

OF all the monastic remains in this, or indeed, any other, land, none can compare with Fountains Abbey in the extent of its buildings, their wonderful preservation, and the ease with which they may be studied. There is also no other ruin in England which is maintained in such admirable order by its owner, and kept free from ivy and other destructive parasites. Not only are the church with its tower and all the claustral buildings almost intact as they were left when unroofed at the Suppression, but the guest-houses and other buildings in the outer court, which are almost invariably destroyed, here remain; while of the infirmary and other parts of the abbey east of the cloister, the walls are still standing to sufficient height to enable the arrangements and uses of the buildings to be made out. In fact, with the exception of the gatehouse and other outlying buildings, of which only fragments are left, we have at Fountains the complete plan of a Cistercian abbey of the first rank. Besides this, both the church and monastic buildings illustrate in a most interesting way the gradual changes that were made after the twelfth century in the arrangements, changes for the most part, except of course in the church, necessitated by the utter impossibility of maintaining in our climate the original rigorous observance of the Rules of the Order, and consequently in the direction of greater comfort.

The story of the foundation of the abbey, of the hardships and desperate struggle for existence of the first convent, and of the sudden change in their circumstances which enabled the monks to begin the buildings, are so well known that further reference to them is not necessary.

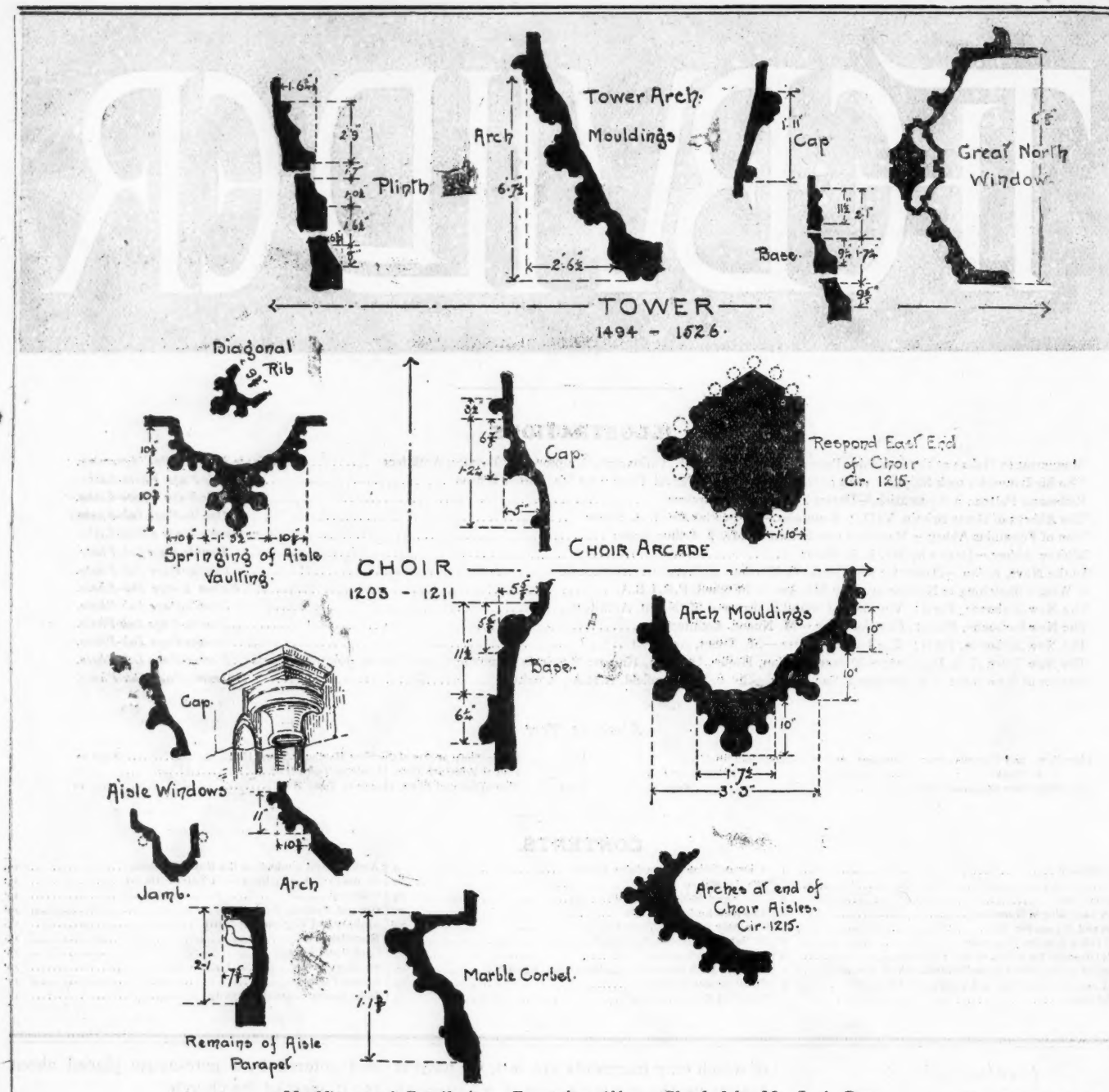
The site bestowed upon the first brethren by Archbishop Thurstan, in 1132, was mostly a narrow alluvial flat in the valley formed by the little river Skell, which is here shut in on one side by a steep cliff, that afterwards served as a convenient quarry, and on the other by a high bank rising from the water's edge. The maximum width taken across the west-end of the church does not exceed 600 ft., and further east it is much less. Exactly in the centre was placed the cloister, with the church on the north side and the monastic buildings on the east, south and west. The inner precinct was entered by a gate-house placed about 350 ft. west of the church.

Although the original arrangement has been modified, there is ample evidence that the first buildings were laid out on the normal Cistercian plan, of which Kirkstall, a daughter house of Fountains, probably affords the most complete example in this country. From certain peculiarities in the oldest parts of the church, notably in the gables of the transept chapels and the manner of vaulting the aisles, it is not unlikely that the buildings were begun under the direction of Geoffrey, a monk of Clairvaux, who came to Fountains with the brethren, after their visit to St. Bernard, to teach them the Cistercian rule.

The first buildings at Fountains were mere huts, as was usual, but the advent of the Dean of York, and shortly afterwards of two of the canons, enabled permanent structures in stone to be begun, probably in 1135. Although subsequent alterations have done much to obliterate the first buildings, considerable portions of them exist, and it is curious to find that they were planned on the same large scale that characterises the present remains.

Of the first church the transepts and parts of the nave are yet standing, and the plan and extent of the presbytery may be traced. Portions of the eastern range are also left, as well as of the buildings on the east of it. The southern buildings have nearly all been

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of "Fountains." Particulars of this and of the three Cathedral series ("England and Wales," "Scotland," and "Ireland") will be found on p. xxv.; also (on page i.) of the recent re-issue, in book form, of the series of English and Welsh Cathedrals.

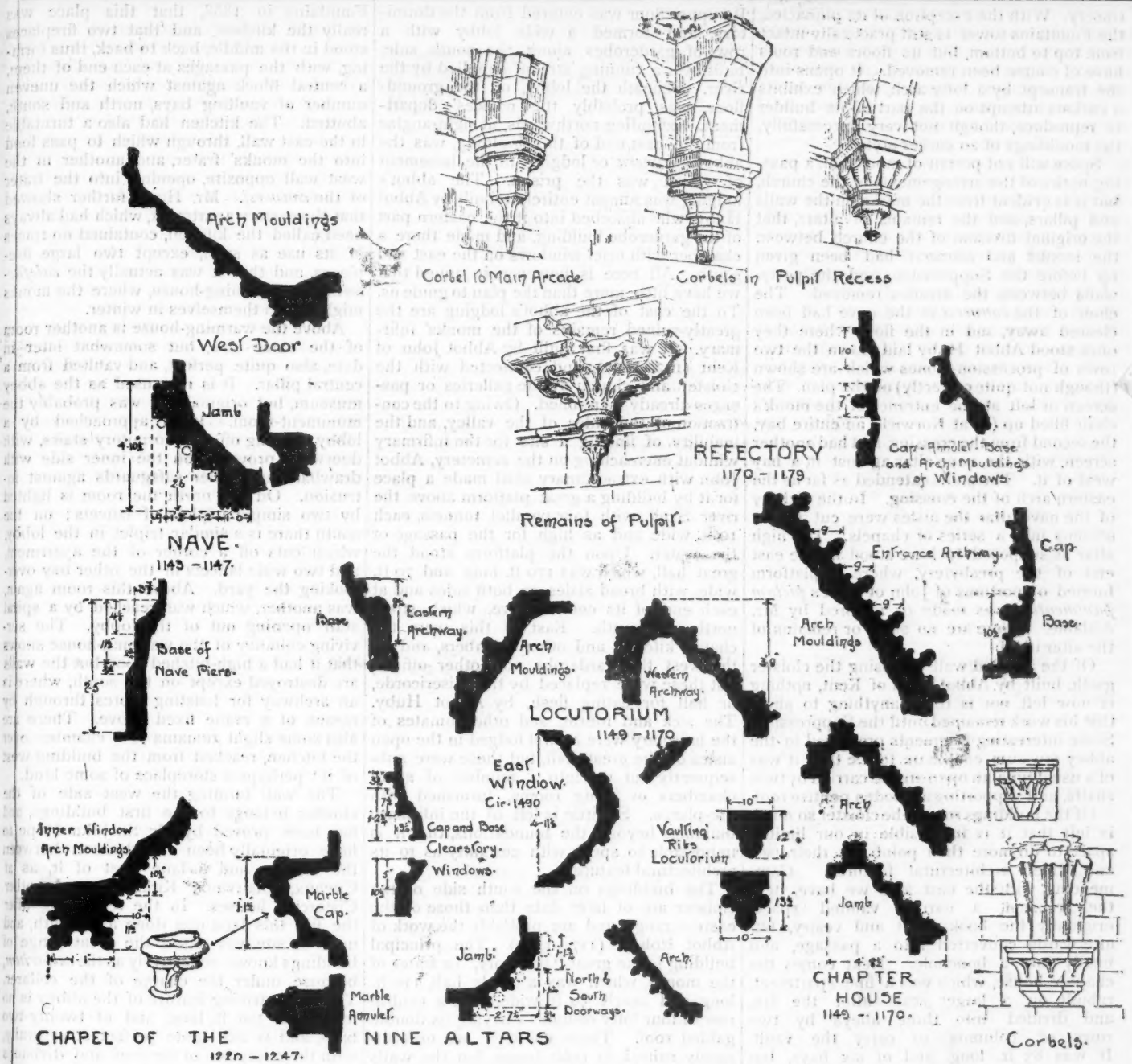


Mouldings and Details from Fountains Abbey. Sketched by Mr. J. A. Reeve.

rebuilt, but part of the kitchen remains, as well as the whole of the west side of the cloister, which was from the first of the same size as now. The two-storied garderobe at the south end of the western range is also one of the first buildings.

In 1146 or 1147, out of revenge for the part taken by Abbot Murdac in the deposition of William, Archbishop of York, armed adherents of the latter came to Fountains, broke open the doors, and invaded the church and buildings in search of the abbot. Not finding him, they set fire to the abbey, which was reduced to ashes. The church does not seem to have been much injured, but the claustral buildings were so ruined that they all had to be rebuilt. The portions first reconstructed were the eastern range, including a new chapter-house and the monks' dormitory above, and the northern half of the western range for the housing of the *conversi* or working brothers. The two guest-houses in the outer court and the infirmary for the *conversi* seem also to have been built just after the fire, perhaps to replace burnt wooden buildings that had hitherto served the purpose. The frater, with a new kitchen and the warming-house, and the southern half of the western range were probably rebuilt by Abbot Robert, 1170–1179. Of the same abbot it is recorded that *instauravit ecclesiæ fabricam*. This may refer to the completion of the nave, which was evidently built in sections. After Abbot Robert's death, no further mention of the buildings occurs until the abbacy of John of York, 1203–1211, during whose rule the number of monks so increased that there were not enough altars for them to celebrate mass at, and the choir was not large enough to hold them. The abbot accordingly began to enlarge the church eastwards, but he had only laid the foundations and set up some of the pillars when he died, and the work was carried on by his successor, John the second, 1211-1219. The extension was finally completed by Abbot John of Kent, 1220-1247, who further built a new cloister and the infirmary, as well as the guest-house for poor folk in the outer court. He also added to the infirmary the northern and eastern sections of the corridor or gallery which connects it with the church and cloister. After John of Kent's death no further works are recorded. During the Decorated period the infirmary chapel and kitchen were rebuilt, and the western section of the gallery leading to the cloister constructed, probably in place of something earlier made of wood. Towards the close of the fifteenth century large Perpendicular windows were inserted in the east and west fronts of the church and at the ends of the Nine Altars by Abbot John Darnton, 1479-1494, who also seems to have replaced the stone vaults of the presbytery and Nine Altars by open wooden roofs, and to have lowered the other high-pitched roofs to correspond with his new ones. The last important alterations were made by Abbot Marmaduke Huby, 1494-1526. To him is due the stately steeple, which was built at the end of the north transept, after, apparently, an ineffectual attempt to prop up the old central tower. Huby also rebuilt and enlarged the abbot's lodging, which stood midway between the cloister and the infirmary, and added an upper gallery over the passage leading to the Nine Altars, with a pew or closet at the church end, wherein he could hear mass said at one of the altars below. He also erected a large two-storied building against the west wall of this gallery, and made sundry important alterations on the west side of the infirmary. Besides building a new tower, Huby walled off the transept chapels next to it, to give additional support, and removed the northernmost altar into the transept. He also seems to have rearranged the western half of the church, and to have built a large additional vestry or sacrists' office against the south wall of the presbytery. Most of Huby's works may be identified with certainty by a creamy-white limestone, which he alone used in the buildings at Fountains.

Of the later history of the abbey it is only necessary to say that it was suppressed in 1539, but beyond the unroofing of the buildings nothing of any importance seems to have been destroyed. The infirmary, the abbot's lodging, and the gate-house, with some of the outer buildings, are practically all that have been partly pulled down, and of these much is left. Whatever else has



Mouldings and Details from Fountains Abbey. Sketched by Mr. J. A. Reeve.

gone has probably disappeared through the ravages of time.

The abbey has been singularly fortunate in its subsequent possessors, though Mr. Aislabie, who owned it in the last century, cleared the church from end to end to make a vista, and destroyed the remains of the cloister to form a garden. His eldest daughter, Mrs. Allanson, to whom the abbey descended, began in 1790 to clear the chapter house of rubbish. The next owner, Mrs. Lawrence, between 1808 and 1845, judiciously repaired the tower, the nave-aisles, and the vault of the great western range. The ruins were finally brought to their present excellent condition by the late Earl de Grey and Ripon, who carried out extensive excavations between 1848 and 1856, and laid bare the remains of the infirmary and abbot's lodging. Some minor works, which had been left undone, were completed by Mr. St. John Hope, by permission of the present owner, the Marquis of Ripon, in 1887-8.

From the brief sketch which we have given of the documentary history, it is time to turn to an examination of the abbey itself. Of its site and the disposition of the main buildings we have already spoken.

The church was originally about 270 ft. long, and consisted of an aisleless presbytery of three bays, north and south transepts, each with three eastern chapels. and a nave and aisles of eleven bays. The west end of the nave was covered by the wide porch peculiar to the Cistercians and Cluniacs. The nave arcades are of the plainest possible character, with simple pointed arches, and cushion capitals to the tall round columns. There is no triforium, and the clearstory windows, plain round-headed openings, with no wall-passage, rest upon a string-course, separated from the tops of the arches by six or seven courses of ashlar. The nave was not vaulted, and probably had a flat wooden ceiling. The aisles were vaulted throughout in stone, but in a very peculiar fashion. The bays are divided by plain, round arches, springing from scolloped corbels built into the piers, about 4 ft. below the capitals, and into the aisle-walls. Upon these rested a series of pointed vaults without ribs, set transversely across the aisle. All these have now fallen, but the cross arches remain throughout. The transepts are plain to a degree. On the east sides are pointed arches opening into the chapels, with round-headed windows in the opposite wall, and above, a clearstory stage corresponding with that of the nave. The south transept gable has two large windows in the uppermost stage. Of the presbytery nothing is left but the foundations underground; its extent is shown on the plan, as is the unusual arrangement of the chapels that adjoined it. The chapels themselves had pointed rubble vaults, and were lighted by two roundheaded windows in the east wall, with a circular opening above, surmounted by curious-pointed gables. This arrangement is probably due to the foreign influence of Geoffrey of Clairvaux.

The Early English extension of the church consisted of a new presbytery with aisles, of five bays, with a transverse eastern chapel or transept, 129 ft. long, called the Nine Altars. There can be little doubt that although he only lived to lay the foundations and to set up some of the pillars, the whole of this extension was planned by Abbot John of York, for the enlargement of the choir and the increase in the number of altars. The presbytery arcades have unfortunately gone, but three of the responds remain, and the aisle walls are standing to their full height. From certain differences in these it is clear that the work of John of York and his successor was confined almost entirely to the new presbytery, and that the fully-developed Early English work of the Nine Altars is entirely due to Abbot John of Kent. Despite later alterations and mutilations, enough remains of the original design to fill us with admiration of the skill of the architect of this beautiful work, which evidently suggested the great chapel with the same name in the corresponding position at Durham.

Of the stately tower added by Abbot Huby, it is only necessary to say that it is a very fine example of a well-known Yorkshire type, the late date of which is marked by the absence of cusping in the window

tracery. With the exception of its pinnacles, the Fountains tower is still practically intact from top to bottom, but its floors and roofs have of course been removed. It opens into the transept by a lofty arch, which exhibits a curious attempt on the part of its builder to reproduce, though not very successfully, the mouldings of an earlier style.

Space will not permit of more than a passing notice of the arrangements of the church, but it is evident from the marks on the walls and pillars, and the remains of altars, that the original division of the church between the monks and *conversi* had been given up before the Suppression, and the party-walls between the arcades removed. The choir of the *conversi* in the nave had been cleared away, and in the floor where they once stood Abbot Huby laid down the two rows of procession-stones which are shown (though not quite correctly) on the plan. The screen or loft at the entrance of the monk's choir filled up (as at Norwich) an entire bay, the second from the crossing, and had another screen, with the nave altar against it, a bay west of it. The stalls extended as far as the eastern arch of the crossing. In the vicinity of the nave altar the aisles were cut up by screens into a series of chapels. The high altar is supposed to have stood at the east end of the presbytery, where a platform formed of portions of John of Kent's *pictum pavimentum* was made or restored by Mr. Aislabie. There are no signs or remains of the altar itself.

Of the arcaded wall enclosing the cloister garth, built by Abbot John of Kent, nothing is now left, nor is there anything to show that his work remained until the Suppression. Some interesting fragments preserved in the abbey museum enable us to see that it was of a usual type, an open arcade carried by twin shafts, and supporting a wooden pentise roof.

Of the buildings round the cloister so much is left that it is impossible in our limited space to do more than point out their uses and chief architectural features. Commencing with the east side we have, next the transept, a narrow vaulted space, originally the book-closet and vestry, but afterwards converted into a passage, and finally into a bonehole. Next comes the chapter house, which was a fine apartment, rebuilt on a larger scale after the fire, and divided into three alleys by two rows of columns to carry the vault. It was 83 ft. long, and of six bays, but the two westernmost formed a vestibule, and were not so lofty as the rest on account of the dormitory above. Only the side walls now remain, but round them is the stone bench on which the monks sat in chapter, and on the floor are the grave-slabs of many of the abbots. South of the chapter house and contemporary with it is a small chamber, covered by a good ribbed vault, and with a door at either end. This was the parlour, in which the monks might talk instead of in the cloister, where conversation of any kind was strictly forbidden. The rest of the range is occupied by a building of the first period, seven bays long, with later alterations and insertions. Through the north end of it was the passage from the cloister to the infirmary; the remainder was a mere cellar. Over all these chambers from the transept southwards was the great dormitory of the monks. It was reached by an existing stair ascending southwards from the south-east corner of the cloister, but almost all the walls have fallen, except those of the extension over the eastern part of the chapter house and the east wall of the southern half. The latter shows, in a most interesting way, how the old wall was raised after the fire, and new windows cut through it. At the north end of the dormitory was a lobby, with a door in the transept wall, through which the monks passed on to a flight of steps descending into the church when they rose at midnight to say matins and lauds. East of the lobby was the treasury. At the south end of the dormitory, and extending eastward from it, was a building two stories high and about 90 ft. long. Its upper floor was entered from the dormitory, and formed a wide lobby with a row of garderobes along the south side, built over a running stream supplied by the river. Beneath the lobby, on the ground-floor, was probably the novices' department. Extending northwards, at right-angles from the east end of this building, was the abbot's *camera* or lodging, in the basement of which was the prison. The abbot's lodging was almost entirely rebuilt by Abbot Huby, who absorbed into it the eastern part of the garderobe building, and made there a chamber with oriel windows on the east and south. All here is, however, so ruined that we have little more than the plan to guide us. To the east of the abbot's lodging are the greatly-ruined remains of the monks' infirmary. It was first built by Abbot John of Kent (1220-1247), and connected with the cloister and church by the galleries or passages already mentioned. Owing to the contraction of the sides of the valley, and the inability of finding a site for the infirmary without encroaching on the cemetery, Abbot John with extraordinary skill made a place for it by building a great platform above the river Skell, with four parallel tunnels, each 10 ft. wide and as high, for the passage of the water. Upon the platform stood the great hall, which was 170 ft. long and 70 ft. wide, with broad aisles on both sides and at each end of its central nave, which stood north and south. East of this were the chapel, kitchen, and other chambers, and on the west the garderobe and other offices, but these were replaced by the misericorde, or hall for eating flesh, by Abbot Huby. The sick and infirm, and other inmates of the infirmary were at first lodged in the open aisles of the great hall, but these were subsequently cut up into a number of small chambers or living rooms, furnished with fire-places. So little is left of the infirmary buildings beyond the foundations, that it is impossible to speak with certainty as to its architectural features.

The buildings on the south side of the cloister are of later date than those of the eastern range, and are probably the work of Abbot Robert (1170-1179). The principal building is the great "refectory," or frater of the monks, which was a noble hall, 110 ft. long and nearly 50 ft. wide, with a central row of four lofty columns carrying its double gabled roof. These columns are unfortunately ruined to their bases, but the walls are standing all round nearly to their full height. Each gable had a pair of large lancet windows with (originally) a round window above. The sides, where clear of the range, contain six similar windows, but the three northernmost on the west side are shorter than the others, and are set in the back of an arcaded gallery built out to contain the reader's pulpit and the staircase to it. The traces of the arrangements of the frater are unusually perfect, and show that the tables stood upon stone legs placed upon platforms against the side walls, with a stone bench behind upon which the monks sat. The high table stood upon a similar platform, or daïs, carried right across the upper end of the hall. The frater is entered from the cloister by an elaborately-moulded round-headed doorway, on either side of which are the arched recesses where the lavatory was formerly placed. Beyond these, again, are two other, but quite plain, doorways, opening into two rooms that adjoin the frater on either side. The easternmost of these is quite perfect, and retains its vault, which springs from a central pillar. The room measures 21½ ft. in width and 40 ft. in length, but its only prominent features are two huge fireplaces (one now blocked up), 16 ft. wide, in the east wall, with ingeniously-joggled lintels. A door on the south opens into a yard. The room west of the frater is 35 ft. square, and has until lately been considered the buttery, for which purpose it is in no way fitted. It was, however, shown by Mr. St. John Hope, at a special meeting of the Yorkshire Archæological Association at Fountains in 1888, that this place was really the kitchen, and that two fireplaces stood in the middle, back to back, thus forming, with the passages at each end of them, a central block against which the uneven number of vaulting bays, north and south, abutted. The kitchen had also a turntable in the east wall, through which to pass food into the monks' frater, and another in the west wall opposite, opening into the frater of the *conversi*. Mr. Hope further showed that the eastern apartment, which had always been called the kitchen, contained no traces of its use as such, except two large fireplaces, and that it was actually the *calefactorium*, or warming-house, where the monks might warm themselves in winter.

Above the warming-house is another room of the same size, but somewhat later in date, also quite perfect, and vaulted from a central pillar. It is now used as the abbey museum, but originally it was probably the muniment-room. It is approached by a lobby opening off the dormitory stairs, with doorways provided on the inner side with drawbars and other safeguards against intrusion. On the north the room is lighted by two simple triplets of lancets; on the south there is a similar triplet in the lobby, which cuts off a corner of the apartment, and two wide lancets in the other bay overlooking the yard. Above this room again, was another, which was reached by a spiral stair opening out of the lobby. The surviving chimney of the warming-house shows that it had a high-pitched roof, but the walls are destroyed except on the south, where is an archway for hoisting stores through by means of a crane fixed above. There are also some slight remains of a chamber over the kitchen, reached from the building west of it; perhaps a storeplace of some kind.

The wall forming the west side of the cloister belongs to the first buildings, and has been proved by Mr. St. John Hope to have originally been the division between the cloister and a lane west of it, as at Citeaux, Clairvaux, Kirkstall, and other Cistercian houses. In the rebuilding after the fire this lane was done away with, and upon its site was raised the great range of buildings known collectively as the *cellarium*, because under the charge of the cellarer. This very striking feature of the abbey is no less than 300 ft. long, and of twenty-two bays, and is still quite perfect structurally, with the exception of the roof and divisions of the upper story. The lower story preserves intact its vault, which springs from a central row of pillars and corbels in the side walls, but the division walls have been knocked down to make a vista, and the whole twenty-two bays are now open from end to end. The four doorways in the west wall show that the range was cut up into at least as many sections. The two northernmost bays formed the outer parlour and a porch covering the door here into the nave. The next four bays formed a cellar, with three rounded-headed windows on the west and a wide doorway for bringing in stores. The two next bays had two west windows but no outer door, and were walled off to form the buttery; the entrance would be in the partition wall. The next bay has a door at each end, and with the adjoining bay formed the entry into the cloister from the outer court. The remaining twelve bays formed the frater of the *conversi*, which was served through a hatch or turntable, now destroyed, from the convent kitchen. It has already been stated that the two halves of the *cellarium* are of different dates. This is shown on the ground-floor by the windows, which are round-headed in the northern half, but larger and pointed in the southern. In the upper story the windows are round-headed throughout. This upper floor was used as the dormitory of the *conversi*, and like that of the monks has a garderobe at one end and a staircase down into the church at the other. Access by day was by an external stair on the western side, under which is a small vaulted apartment that served probably as the cellarer's checker or office. From the stair, which was

covered, a pentise extended along the *cellarium* wall as far as the church.

Standing athwart the west end of the garderobe of the *conversi* are the ruins of a large hall, divided by pillars into a nave and aisles of at least six bays, with the remains, perhaps, of a kitchen on the south-west. It is built over the river on four parallel tunnels, like the monks' infirmary, and as it is of earlier date, probably suggested to John of Kent the idea of his much larger platform. From its close connexion with their part of the abbey this building was most likely an infirmary for the use of the *conversi*.

A few yards to the west of this infirmary stand the interesting ruins of two large two-storied guest-houses. The easternmost is much ruined, especially as regards the upper story, which was gained by an external staircase. The ground floor retains more or less of the five clustered pillars that carried its vault, and the north gable has two two-light transitional-Norman windows, with a blocked wheel window above. The western house, though more ruined than the other, bears signs of greater comfort and convenience. Both houses have undergone alteration, but seem to have had a hall on the ground floor, with a solar above. An additional hall of some size, now ruined to its foundations, was afterwards built against the north side of the western house.

Of the thirteenth-century gatehouse only an insignificant fragment is standing. Outside it there are some remains of the little chapel that usually stood there in a Cistercian abbey. This was of the twelfth century.

Two other structures deserve a passing word: the one, a charming little twelfth-century foot-bridge, crossing the Skell close to the eastern guest-house; the other, a well-built thirteenth-century bridge of two arches, a little higher up-stream, in line with the gatehouse. On the rising ground to which these bridges lead are the ruins of the bake-house, brew-house, and malt-house.

A little to the west of the bridge is a *rara avis* indeed, a thirteenth-century mill, with traces of an older structure coeval with the earliest portions of the abbey, and still in full work!

It is only natural that so important a ruin as Fountains should have been the subject of many essays, historical and architectural. The most important of these until recently were an excellent paper by Mr. Gordon Hills, printed by the British Archæological Association,* and the two volumes so ably edited by the late Mr. Walbran for the Surtees Society. From the architectural point of view all previous works have now been surpassed by a magnificent folio volume lately published by subscription by Mr. J. Arthur Reeve.† In this monumental work not only is every part of the abbey most thoroughly planned and illustrated, but *every single wall-surface* is given in elevation, with all the stones, jointing, cracks, and scars carefully drawn to scale! We cannot but admire the patience which produced the drawings, and the accuracy with which every feature is reproduced. The series of drawings is preceded by a brief historical introduction, a catalogue of the abbots and their works, and a careful architectural description of the buildings. The addition of a few plates of mouldings would have satisfied the most exacting student. We are indebted to Mr. Reeve for his kind permission to reproduce, on a necessarily reduced scale, his general plan of the abbey buildings; and he has also supplied us, from among his memoranda, with the sections of mouldings and sketches of some of the architectural details, which accompany this article.

CLOCK, BRILL, BUCKINGHAMSHIRE.—On the 22nd ult., a large chiming clock was started at Brill Church, Buckinghamshire. It is the gift of Mr. J. H. Seargeant, of London, and the work has been carried out by John Smith & Sons, Derby.

* *Collectanea Archæologica*, ii., 251–302.

† "A Monograph on the Abbey of St. Mary of Fountains." By J. Arthur Reeve, Architect. London: 1892.

NOTES.

THE eight Bills which the London County Council has deposited for the purpose of obtaining command of the water supply of London by purchasing the present companies are, we suppose, to be regarded rather in the nature of measures to test public opinion than as seriously framed with the expectation of their being passed into law during the coming Session. According to these Bills the transfer shall take place on December 31, 1895, but as a new Council has to be elected in March it is hardly likely that the new body will be in a position to take over the companies' work by the end of the year. It is also doubtful whether the new Council will even go so far as to pass their predecessor's Bills through Parliament until they have fully discussed and considered the question. It is indeed somewhat doubtful if it is desirable for a moribund Council to introduce Bills of so great importance into a moribund Parliament. Some of the terms proposed by those Bills are scarcely likely to meet with legislative approval. For example, no compensation is to be given to the companies in respect of compulsory sale; but such compensation has always been regarded by the Legislature as reasonable and fair. It is quite certain, therefore, that the companies will have to be paid this item. Again, no allowance is to be made "in respect of any assumed future increase of the rateable value other than an increase due to alterations or additions involving increased supply of water." In other words, as we understand the Bill, no allowance is to be made for any prospective increase in value, which usually forms one element in the assessment of the present value. If a railway company takes the house of A, which in ten years' time is likely to be worth 1,000*l.* more than it is at present, an arbitrator regards the prospective increase as a reason for adding something to the value of the house in assessing its price. We can see no reason why there should be an exception in this instance to the general rule. It may be a public misfortune that the water-supply of London has not long ago been taken out of the hands of private companies, but, as it is in their hands, it is obvious that they must be treated in the same manner as any other persons whose land or business is taken over by a company or a corporation.

THE last word has not yet been said respecting the curious proceedings at the meeting of Portland cement manufacturers, which was held in the Cannon-street Station Hotel on November 12 last. After reading the report of those proceedings we characterised the statutory declaration—that the signatories had not at any time added any material to their cement-clinker or cement—as both foolish and useless—foolish because it had not been ascertained that every added material was injurious to cement, and useless because the declaration was merely retrospective. We are glad to find that the Cement Section of the London Chamber of Commerce has now taken the matter up, and has, in the words of its secretary, Mr. Kenric B. Murray, "instructed eminent experts, not themselves cement-manufacturers, to make exhaustive inquiries into the extent to which the introduction of Kentish rag and other materials into the manufacture of Portland cement may be found to prevail, and as to their effect on the quality of that article." But, after all, this question of manufacture is not of primary importance to the user of cement. What he requires is a material possessing certain qualities of tenacity, endurance, and economy, and to ascertain these qualities the tensile strength, soundness, and fineness of Portland cement are tested. In a letter which appeared in the *Times* on Saturday last, Mr. Gilbert R. Redgrave draws attention to the laxity and lack of uniformity of English tests; he advocates (and wisely, we think) the adoption of a standard scale of tests on the lines of those enforced in Germany, although perhaps more stringent in some respects, and also the formation of a strong association of English cement-producers and cement-users bound to enforce those tests. This is certainly an infinitely more rational proceeding than the signing of a declaration as to the ingredients of cement produced in past years. Why should not the gentlemen who were so eager to sign the retrospective declaration at the Cannon-street meeting sign another statutory declaration to the effect that they will not in the future (the past may be left out of consideration) supply any cement which does not comply with certain standard regulations? We should then be assured of their good faith, and architects would doubtless make haste to specify their cement in preference to that manufactured by non-signatories.

MR. T. G. JACKSON wrote this week to the *Times* to suggest that advantage should be taken of the establishing of District Councils for an inquiry into the rules under the "Building Act," and for their revision if necessary. He bases this demand on a failure of the law (as he alleges), in regard to new buildings at Wimbledon. At the end of his letter Mr. Jackson wrongly refers to the Parish Councils as if they were the same as District Councils. The letter, if we may say so, is characterised by some confusion of thought; the Urban District Councils are simply the old Local Boards under a different name, and there is no more reason why this change of nomenclature should make it a fitting time for an inquiry into the state of the law on buildings than into any other of the various matters connected with local government. What Mr. Jackson wishes is an inquiry into the state of the law as to buildings, which is quite distinct from a complaint as to its administration; and he also has a grievance that the Local Board of Wimbledon have allowed a new building to be an infringement of the existing by-laws as to open spaces framed under the Public Health Act, which Mr. Jackson miscalls "the Building Act," under the plea that it is an addition to an old building. Mr. Jackson's letter has elicited a reply from the Clerk to the Wimbledon Local Board which is a still more remarkable exhibition of confusion of argument. "Mr. Jackson," he says, "contends that an addition to an old building is in fact a new building. But anyone connected with local government law knows very well that this is not so." The clerk then proceeds to cite a case to justify this statement, and then proceeds to point out that the question whether a work is a new building or an addition to an old building is "a question not of law, but of fact, to be decided upon all the circumstances of the case." This latter statement correctly lays down the law, but it is opposed to the first observation, which we have already quoted. Without knowing all the circumstances of the case to which Mr. Jackson somewhat vaguely refers, it is impossible to say whether there has been an infringement of the by-laws. He speaks of a local builder "introducing a large building into a confined back-yard, to the danger and annoyance of his neighbours." Whether this is properly an "addition," or a "new building," depends, among other things, on the state of the adjacent buildings. Mr. Jackson winds up his letter by the complaint that if a local authority does not perform its duty "there exists no machinery for making it do right." We fear that the statement will hurt the feelings of lawyers, who are taught that there is no wrong without a remedy. But has Mr. Jackson verified this assertion? The writ of *mandamus* is employed every day to compel authorities to perform their duties, and Section 101 of the Public Health (London) Act, 1891, and Section 299 of the Public Health Act, 1875, expressly state that the performance of a duty by the authorities

may be enforced by *mandamus*, though no such assertion of a fundamental principle of English law is really required.

THE Report of the Council of Almoners for a period extending over the last three years in regard to Christ's Hospital has recently been issued. This Report will no doubt again raise the question as to the suitability of the site purchased at Horsham from the Aylesbury Dairy Company for the purposes of a school. In the Report of Mr. Rogers Field and Dr. Charles Kelly, the Medical Officer of Health for West Sussex, the opponents and friends of the site will find abundant argument. It seems, however, to be too late, looking at the matter from a practical point of view, to reconsider this question of site. The estate has been purchased at a high figure, it is not likely that it could be resold as agricultural land except at a heavy sacrifice. There may be drawbacks to the site, but these do not appear to be such as cannot be overcome by skilful and prudent building and sanitary arrangement. There are many public schools of which the sanitary and health state is satisfactory, which yet, however, are not situated on the most ideal sites—such, for example, are Eton and Harrow. There cannot be a doubt that the Horsham site is high and open. It may be that the Council of Almoners might have made a better choice, but having purchased the estate, probably the best must now be made of it.

AT the church of the Ascension, Lavender Hill, an organ by Messrs. Beale & Thynne has been erected in which a new method of decorating organ-pipes has been carried out which is of some interest. It is a process of metal etching, a patent of Mr. Pulling's, for which Messrs. Beale & Thynne are the agents. The design is drawn on the pipe-metal by hand while the metal is still flat, the pattern being placed so as to show in front after the metal has been rolled into pipe form. The metal is then protected on both sides by a temporary coating impervious to acid, except where the interstices of the design occur, and placed in an acid bath, when the result is a design in relief between the spaces bitten out by the acid. Thus a decoration is formed in relief in the metal, which is indestructible and will never require renewing. Colour can also be applied to heighten the effect, if desired. Of course the process could be applied also to produce a design in intaglio in the metal, and of a more delicate kind than the examples which have been submitted to us, which did not strike us as representing the best that could be done. The method certainly presents some new possibilities in the decorative treatment of organ-pipes.

FOR some years the editor of the *Baptist Hand-book*, an annual "published under the direction of the Council of the Baptist Union," has devoted a certain amount of space to the description and illustration of new Baptist chapels. The hand-book for 1895 is no exception, Part VII. being denominated "Architectural." It furnishes somewhat curious reading, and the illustrations give point to Matthew Arnold's reflections on what he termed Hebraism and Hellenism. The chapel at Loughborough Park, Brixton—a building with arched doors and windows, with mullions, transomes and tracery—is said to be "in the Grecian Renaissance style usually adopted by architects when designing this class of building!" We were relieved to find that no architect's name appears in connexion with this building, and it may therefore be presumed that the builders—whose names we will charitably suppress—are responsible both for the design and the description. Their modesty, however, in not claiming the title of architect, is not emulated by the builder of the squat little Silvertown Chapel; this gentleman concludes his report with the business-like announcement, "Architect and builder, Mr. W. H——, Crown Works, ——, ——." Evidently Mr. W. H—— has an eye to future commissions and profits. Another chapel might, from the printed description, be taken to be of American origin—"the free Romanesque style of architecture" conjures up thoughts of Richardson and his many followers—but the illustration, as before, gives the lie to the description. Of all the buildings mentioned, there is only one really worthy architectural monument, and that is Mr. Hippolyte J. Blanc's "Coats Memorial Church" at Paisley; the other buildings are simply nowhere. This one church has cost about 100,000*l.*, while the remaining *thirty-two* have been built for less than half that amount. The *one* furnishes accommodation for 1000 persons, at a cost therefore of 100*l.* a sitting, while the twenty-nine chapels, for which statistics both of cost and accommodation are given, provide 12,900 sittings, at a cost of 45,581*l.*, or only 3*l.* 10s. 8d. a sitting. The cheeseparing economy revealed in these latter figures is astounding. Baptist buildings are too cheap to be of much architectural merit. There is nothing monumental about them. The money spent in adorning the "front" of a chapel—and building committees seem unable to get beyond this—is, artistically, sheer waste as long as the construction is so flimsy and the "back" so bald and ugly.

A CORRESPONDENT who signs himself "A Duffer," but encloses no name and address (for which reason we do not print his letter),* takes exception to the angels in Mr. Hamilton Jackson's design in our issue of December 22, and wants to know something about the construction of winged angels; whether they are born with drapery; whether they ever change it; whether it ever wears out; how the wings are put on, &c. We may point out to our correspondent that we are not responsible for the construction of angels which are not made on the premises, but merely published by us with the artist's name attached. His queries should more properly be addressed to the artist. *Au reste*, we quite agree with our correspondent that the delineation of robed angels with wings growing out of their shoulders through the drapery is an absurdity the moment you begin to reason about it, and we have always considered it a very weak treatment. But some allowance must be made for the double difficulties under which a painter labours in depicting an angel. He has, in the first place, to convey the idea of a spiritual being to the eye by means of a corporeal representation. We know but one form of body characteristic of intelligent beings; we can only realise an angelic form in human shape. And it is no doubt to avoid the collision between a spiritual idea and a corporeal realism, that many painters in all ages have taken refuge in the conventionality of a long drapery for angels, leaving the angelic body to the imagination. This is of course a weak evasion of the difficulty; and a much finer and more powerful way of meeting the problem would be to represent the angels as splendid creatures in human form and in naked vigour and grandeur. Michelangelo generally took that course; Blake did in some of his most powerful drawings. But an artist who tries that will find himself in a difficulty of another kind. He will find that the British public will not stand naked angels; they will call them "improper," and pious families will not purchase his designs. What, then, is the unlucky painter to do? Rembrandt gave a hint in his beautiful little picture of "Jacob's Dream," where the angels seem like indistinct but radiant forms gliding down a beam of moonlight. More might be made of this idea perhaps, and an angel be represented by a benign countenance emerging from a radiant mist. But this, though more idealised than the drapery, does not leave much for the draughtsman, and is wholly inapplicable to sculpture. As to the attachment of the wings, we have always held that where winged angels are represented, the wings should take the place of arms, to allow for anatomical possibilities. But we doubt if the British public will stand that either. It is the British public that is at the bottom of the difficulty.

* We wonder how often we shall have to call attention to the notice which has stood for years under "Notices to Correspondents," to the effect that we decline to print letters unless authenticated by the enclosure of name and address, whether for publication or not.

LETTER FROM PARIS.

THE great artistic event of the last month, the collection of designs for the 1900 Exhibition, has been already fully treated of in the *Builder*. The attention of the Parisian public has been concentrated on this exhibition; but some notice is due to another exhibition, much more modest, yet very interesting—that of the works of Joseph Chéret, the sculptor, who has been so prematurely taken from us, which have been collected at the École des Beaux-Arts. Like his brother Jules, whose coloured lithographs decorate the walls of Paris, Joseph Chéret was a designer of the first order, whose compositions betray an originality and a facility of handling truly remarkable. In his terra-cotta bas-reliefs, in his vases and minor decorations of all sorts, he could produce garlands of women's and children's figures, treated with a grace and elegance reminding one of Clodion. From this collection the State has chosen, for the Luxembourg Museum, a very pretty fountain, decorated with a group of children crowning a dolphin.

This exhibition of the sculptures of Chéret, with its grace and its essentially modern feeling, contrasts strangely with the average exhibitions of the École des Beaux-Arts, which exhibit more or less of the severity consequent on official training. Even here, however, it seems that the strict rules of academical tradition are somewhat ignored by the young artists of to-day. This, at least, is what is to be gathered from the report of the last "Envois de Rome," by M. Henri Delaborde, who is very severe on the young students of the Villa Medici. The criticisms of the venerable Academician appear to us to be unduly bitter, especially in regard to the subjects in painting and sculpture. He reproaches the young artists with neglecting the inspirations to be derived from their surroundings, despising the examples of the old masters, and following those of the fashionable artists of the day; with having, in a word, their eyes rather on Paris than on Rome. Without wishing either to discuss or justify this accusation, we may content ourselves with observing that it is at all events not new, and that the same criticisms were addressed to the "Prix de Rome" men fifty years ago, at the time when Eugène Delacroix figured among the Academicians of his day as a most dangerous and revolutionary person.

It is generally in the month of December that there occurs every year the rearrangement of the Luxembourg Museum occasioned by the necessity of finding place for new works. This year the operation has been postponed in consequence of the various repairs necessary in the very insufficient buildings in which the works of our modern artists are stored. There is talk, it is true, of enlarging the museum by covering in the terrace towards the garden, forming thereby several new galleries for sculpture and for foreign paintings; but this is only a half-measure, and in a few years something further would have to be done. In any case nothing good will ever be made out of the old orangery, and it would be far better to build at once a large museum worthy of the claims of contemporary art. In this matter the State will soon find itself left behind by the Municipality of Paris, which is working hard at the organisation of its two museums, that of the "Pavillon de la Ville" (now enlarged by a glass annexe forming a winter garden intended for a permanent sculpture gallery), and the Galliera Museum, where are already installed the fine tapestries, still little known to the public, which the Service des Beaux-Arts has had repaired at the Gobelins. This latter museum, as we have already said, is to be almost entirely reserved for industrial art, which is now receiving great attention everywhere. We are happy to state that, thanks to the energetic impulse given by its President, M. George Berger, the "Union Centrale des Arts Décoratifs" has at last entered

on to the right path, in looking after the interests of modern industrial art. Thus it has just been determined that all the resources at its disposal are, for the next five years, to be devoted to the production of objects of art intended to figure at the Exhibition of 1900, and which are all to bear the names of their authors, whatever may be the rank of the latter in the hierarchy of decorative industrial art. The Museum of Decorative Art has just come into possession of some new and interesting objects. Among these are eleven models of animals, sculptured by Caïn for the decoration of the Château of Chantilly, which have been presented by the Duc d'Aumale; a fine collection of Oriental faïence; and a triptych on a gold ground, which forms a curious specimen of German art of the fifteenth century.

It was announced the other day in the *Builder* that M. Raoul Verlet had obtained the first premium in the competition opened by the town of Angoulême for the erection of a monument to the memory of President Carnot. This young and very clever artist has also been commissioned to execute the monument to Guy de Maupassant, which the Municipal Council have ordered to be erected in the Parc Monceau. This monument, the architectural portion of which has been entrusted to M. Deglane, comprises an exedra surmounted by a column carrying a bust of the novelist. On the bench of the exedra is seated a young woman, in very elegant modern costume, who appears to be in a reverie over an open book held in her hand.

People are beginning to be concerned in Paris about the danger which may arise to our trees and plantations in carrying out the scheme which may be adopted for the future Exhibition of 1900. The architects have out-rivalled each other in imagining fairy palaces on paper, almost all of which, in conformity with the programme, extend from the Champ de Mars to the Champs Elysées. Unfortunately the portion which they propose to occupy is one of the most charming bits of plantation in Paris. The fine plane-trees which border the parapet of the Quai d'Orsay and the long alleys of the Cours la Reine will alike be sacrificed. It would be too bad brutally to destroy, for the sake of constructions grandiose but necessarily ephemeral, the luxuriant verdure of this corner of Paris, the transformation of which was the glory of Baron Haussmann and of Alphand. The latter understood so well the importance of trees as one of the great charms of Paris, that he scrupulously respected them in his admirable scheme for the 1889 Exhibition. It is to be hoped that his successors will show a like spirit in respecting those promenades which are among the greatest ornaments of the capital, and that the Exhibition of 1900 will not be a mere agglomeration of palaces which will leave a desert behind them.

We have already announced the death of Jean Gigoux, the oldest of contemporary French painters, who has died quietly at the age of eighty-eight. He exhibited for the first time in 1831, and in the present year he sent to the Salon a portrait of a woman, of which the treatment and the colour betrayed not the slightest enfeebling of his hand through age. He was born in 1806, at Besançon, and, having studied design at the art school of his native town, he came to Paris to complete his education in 1828. His reputation dates from the Salon of 1833, where he exhibited his picture of "Henri IV. Écrivant des verses sur le Missel de Gabrielle d'Estree." He sent also to other Salons noticeable portraits. In spite of his success, however, he shortly after abandoned both *genre* and portrait painting in order to devote himself to historical painting. He painted at the Conseil d'État the "Charlemagne Dictant ses Capitulaires," which was burned by the Commune in 1871; at St. Gervais, a "Flight into Egypt," a "Repose in Egypt," an "Entombment," and a "Resurrection." He was at the same time occupied with drawing for engravers, and made a splendid set of illustrations for Gil Blas, of which it is difficult to procure a copy now. Gigoux had received medals in 1833, 1835, and 1848; he received a decoration in 1842, and was promoted as "Officier" of the Legion of Honour in 1880; he obtained also an important award in the Exhibition of 1889. He was a man of very charitable disposition, and was constantly employed in unostentatiously assisting artists who had been unprosperous in life.

Gigoux was a learned collector, and had assembled at his house in Rue Chateaubriand a number of works of special value and representing many schools of art. He had always expressed his intention of leaving this collection to the Louvre, and consequently there was much surprise expressed when it came out that by his will he had left all these works, not to the national museum of art, but to the museum of Besançon.

Since the foregoing portion of this letter was written, the jury have given their award on the Exhibition designs, as follows:—Premiums of 6,000 fr. to M. Ch. Girault, M. Eugène Hénard and M. Paulin; premiums of 4,000 fr. to MM. Larche and Nachon, MM. C. Bernard and Cousin, M. Raulin, and M. C. H. Gautier; premiums of 2,000 fr. to M. Esquié, MM. Rey and Trouchet, M. Blavette, and M. Sortais; premiums of 1,000 fr. to M. Baumier, MM. Louvet and Varcollier, MM. Masson and Détourbet, M. Jacques Hermant, M. Mesves, M. Thomas, and M. de Tavernier. As there are three first premiums, the award gives no clue as to the final selection, and we have yet to learn what design will be carried out.

A WEEK'S SKETCHING IN NORMANDY.

THE better the day, the better the deed. In spite, however, of the old proverb, Sunday is not the best day for a visit to Mont St. Michel; excursionists throng the narrow street and crowd the inns; but, as is often the case with French buildings on Sundays, the Castle and Abbey are open to all comers, and we spend the morning rambling through the galleries, ramparts, prison cells, and other buildings that go to make up a picturesque whole not often equalled. The guide is an old soldier, and moreover is one who can give other information than the usual patter, and one learns much, in reply to questions, about events that heretofore have been dry historical facts perhaps; here events seem real. We stand, or rather stoop, in the narrow cells so long used as prisons; we see the site of the iron cage of St. Michel, destroyed in 1777 by Louis Philippe, then Duc de Chartres; we see in the gateway the original iron portcullis, one of the very few still remaining; just outside, two cannon captured from the English during an ineffectual bombardment; and then we make our way up to the great church, which crowns the summit of the rock, with its fine Norman nave and fifteenth-century choir, the latter terminating in an apse of singularly beautiful design; then through a doorway into the thirteenth-century cloisters, with their very English detail, an endless field for sketches. We make our way down by the ramparts and innumerable steps to the small church in the one narrow street; mass is being celebrated, and we are confronted by a notice requesting strangers to remain outside during service. As almost the whole congregation consists of the peasant women, mostly in their short frocks, quaint white caps, and noisy sabots, the children each with a bunch of flowers, we feel that our garments will betray us, and the visit must be postponed. Making our way back to La Maison Rouge—who that has been to Mont St. Michel does not know this inn, and Madame Poulard, its charming hostess?—we sketch the view below us from the verandah outside the bedroom by way of a rest after the morning's climb, and then by way of finishing our day, walk out on the causeway, where the best general view of the Mount is to be had.

Monday morning sees us on towards Coutances, for a long stay cannot be made even at Mont St. Michel when so much ground is to be covered in so short a time. Madame Poulard brings out her souvenir book, we add our quota, and say *au revoir* not without regrets, for we know we shall be welcomed nowhere else as we are welcomed here.

The bill, of course, has to be paid, and we are a little staggered to learn that no books are kept. "What have you had?" and we rack our brains to remember everything that we have ordered or consumed since arrival; so confiding a hostess must not suffer by her altogether delightful ways. Through pretty country—very different to that part of France travelled by most English on their way south, with its miles of poplars and flat horizon—we journey to Coutances; three or four stations before arrival the train has been filling up with peasants, in the cleanest and gayest costumes, and we learn that we are to see that charming old town at its very best. Monday is market-day, and who that has once seen Coutances on market-day can forget the scene? It is a long, steep climb from the station up the hill, but the whole place is alive and the bustle and noise is astonishing. The streets are crowded with two-wheeled carts, mostly driven by women, many of them covered with tilts of extraordinary size and of all tints, bright blue predominating; as we near the cathedral our pace slackens, and we pick our way between the stalls and barrows with which even the bye streets are thronged; we turn the corner into the small market place and get our first near view of the cathedral towering up with its great western *façade* above all the jostling crowd below.

Specially striking at a first view is the sky-line of this front, for in addition to the twin towers and spires, two secondary towers or large turrets, crowned also with spires, flank the front, and greatly increase the breadth and dignity of the composition, as well as add to its picturesque outline. Two other features in this cathedral stand out prominently in the remembrance after even the briefest visit: the clever management of the apse, even in a district where the apsidal treatment is universal; and the beauty of the lantern-tower at the junction of nave and choir. This latter feature is one which seems to have pleased its designers mightily, for again and again in other churches, either in Coutances or in the villages round, copies more or less exact of this tower are to be found. In the great Renaissance church of St. Pierre, close to the cathedral, a curious and very interesting design is to be found; in which, with Late detail, almost identical treatment is employed. Of course, with such busy streets, sketching was almost impossible, and besides, the scene was too pretty and animated to forego the pleasure of watching it and mixing with the people; so a hurried railway platform sketch the following morning was all that was attempted by one of the members of the party, the other members being content with equally-brief sketch-book notes of head-dresses and garments peculiar to the locality. A short journey *viâ* St. Lo brings Bayeux in sight, and here we stay but a few hours, the cathedral and the famous tapestry alone dividing attention. A quiet, peaceful old place, very clean, very sleepy, with one large inn and one small inn; in trying the latter we are agreeably surprised to get a capital *déjeûner* for 5 f. the two of us—seven or eight well-cooked courses, finishing up with an abundant supply of fine peaches. This leaves an impression not altogether unfavourable to small inns, and one which is to be entirely justified by further experiences.

Starting by train again we pass the beautiful Bretteville churches, one on either side of the line, and reach Caen, but as a long visit has been paid here previously we continue our journey to Lisieux, which is fresh ground as far as we are concerned. We arrive after dark, and get only glimpses out of the hotel omnibus windows of an old timber-framed house here and there, fitfully lit by the street lamps, and a dim outline of two great towers, one with a spire silhouetted against the sky, sufficient to make us long for our morning ramble through the old streets. However, dinner is welcome after the day's journey, and we are glad to find as we travel eastward that the eternal cider is giving place to the red wine which is to be our beverage for the rest of the trip. Next morning's walk through the streets of Lisieux soon showed us that the peeps of the evening before gave no idea of what really was before us; the charm of the cathedral is indeed great, but the charm of the old streets is greater. In some streets every other house is architecturally interesting; the only English town that in any way can be compared with Lisieux is Chester, but Chester has not the old-world air that is the characteristic of Lisieux, and nowhere in Chester is there such a street as the Rue aux Fèvres; here the inhabitants might with ease shake hands out of the second floors of the overhanging stories. A nasty, smelly street, it is true, and a pestilential place in which to sit and draw; but what a subject for an artist, the view of this quaint group of untouched Mediæval houses! Not only the general view either, for the detail in moulding and carved work is exquisite in some of the houses, and the figure-work, though often grotesque and coarse, is refined and delicate in many examples. We were fortunate here, also, for on the Wednesday spent in Lisieux nearly the whole of the large square was covered with stalls and market-women; a fruit and vegetable market this, a market where immense ripe peaches went for two and three sous each. The market-square is a large one, and, though crowded, sketching could be indulged in, but from beginning to end a small knot of onlookers congregated; the general attitude is that of wrapt admiration; this, accompanied by occasional kissing of the finger-tips to the drawing on the part of the more enthusiastic individuals, and with the invariable addition of a complimentary little speech, and a bow on departure, such as only a Frenchman can give. Very pleasant is the reception that is accorded to the artist in France, provided that ordinary civility be shown in the

request for permission to draw; a little care in this respect ensures all possible facilities, and secures admission to house-tops and other advantageous positions for a sketch, which could not be obtained in any other way.

From Lisieux the journey is not a long one to Evreux, but the contrast between the two towns is great. Evreux gives to the stranger the impression of being new, of being clean, very clean, and has a general air of being well-to-do, whilst its cathedral is unlike anything before seen on the trip. The general view from the east shown in the illustration brings into prominence the chief peculiarity in the structure; that is the curious open-work spire. It is a wooden spire covered with lead, and has a most fantastic, though not unpleasing, effect. Contrast this Mediæval open spire with the great cast-iron erection on the central tower of Rouen Cathedral, and the latter must certainly come off second-best. It is quite possible that the Evreux spire may have suggested the idea for its near neighbour at Rouen. Neither the iron nor the wooden spires at these two places are, however, to be compared to the stone treatment of the same idea—illustrated, for instance, in the western spires of that little-known building, Nôtre Dame de l'Épine, a church six miles from Châlons-sur-Marne. The town of Evreux presents another example of the parent idea in the cathedral, with its offspring in later buildings in the town and neighbourhood; in the market square the Belfroi showing much the same design and construction as in the cathedral spire; whilst in the Church of St. Taurin, also a resemblance in some details is to be traced. Dreux, our next stopping-place is less interesting; the late fifteenth-century church is nevertheless of fine proportion, and spacious, and the Hôtel de Ville is an imposing structure of the same period.

Chartres is before us, and the attractions of Dreux would be indeed great could they delay our departure for Chartres. Our arrival here, late in the evening of Thursday, was again a bit of good fortune; the whole place was alive with a great fair. As we were intending to stay till mid-day on Saturday the markets also would be in full swing before we left, and the markets at Chartres were by far the largest and busiest we had seen—four distinct markets going on simultaneously, bringing—with the fair also—crowds of strangers into the place, and giving the town an air of prosperity which was very pleasant in the midst of general agricultural depression. Chartres is a great agricultural centre, situated as it is in the midst of one of the richest corn-growing districts in France. About eight o'clock, or a little later, in the evening we made our way up to the cathedral in order to get some idea, even in the darkness, of its magnificence and grandeur. A surprise was in store—the building was lit up; on entering by the south transept portals an extraordinary sight met our gaze. The whole of the vast building was crowded with people; and, amidst intense and reverent silence on the part of the great throng, a monk was preaching with a powerful eloquence which compelled attention. In a long brown frock, roped round the waist, with sandled feet and flowing white beard, he made a picture not easily forgotten. We paid our four sous and took possession of two seats where we might watch the scene and contemplate the magnificent interior, under circumstances not likely to be often repeated. Never before had the grandeur of the building appealed to us as it did now in the light of the flaring oil-lamps below, with the dim outlines of the groined roofs high over our heads, almost lost in obscurity and gloom. It was over all too soon, and as the crowd streamed out into the night we lingered, until one after another the lamps were extinguished, and we, too, departed, wondering whether day-light would have in store for us anything that could compare with the impressions we had just experienced. A visit to the cathedral next morning answered this question in a moment; for the altogether fresh beauty of the painted glass showed us, what we had had no idea of the previous evening, that nearly every window was a glory of gorgeous colour, such as we had never seen before. Sketching was out of the question that morning; no sketch could give the loveliness and sparkle of this glass. The interior of Chartres Cathedral is one of those places where one must not hope to work too much; it is a place to enjoy, and to moon about in; a place to see under different conditions of light; a place in which to take a morning view of the apse, with the eastern sun streaming through the great wall of painted glass which makes up the clearstory; a mid-day view of the nave and aisles; and last of all, and, perhaps, best of all, the view of the western windows with the setting sun behind them, flooding the church from end to end with coloured light; nothing could be more beautiful than the rose window by Villars de Honnecourt seen under these conditions; it is a perfect treasure-house of architectural loveliness. And then for those who reverence such things there is the old twelfth-century miracle-working image of the Black Virgin, in the north aisle of the choir. As we see the crowd of devotees around, and the votive offerings which adorn this shrine, we find it difficult to realise that, but a hundred years ago, this image could have been crowned with the revolutionary bonnet rouge!

The church of St. Pierre would, anywhere else than at Chartres, receive far more attention than it usually does receive. The vastness of the cathedral, with its manifold interests, overpowers all else here, and yet St. Pierre would take front rank amongst fine churches. It is chiefly of early date, belonging to the thirteenth century, and possesses an abundance of painted glass, hardly less interesting than that in the cathedral.

From Chartres we turn our steps regretfully homeward, crossing Paris, where we must confess to forsaking architecture for shopping, and proceed from the Gare du Nord straight to Amiens. Here Sunday, the last day of our week's trip, is to be spent. Arriving late at night we tumble into the most comfortable of the various hotel omnibuses awaiting the train; but our purses are lighter and our hearts a little heavy before we leave the resting-place which had welcomed us; we like not the footsteps of the American tourist—they are not easy to follow. We did at Amiens what all visitors do; we *did* the cathedral, and we sighed a little for the freedom we had enjoyed when visiting other places; sketching was not pleasant, also, here, for the day was cold, and a very rapid sketch of the western portals exhausted all energy for outside work; so, with the addition of a little work in the marvellous choir-stalls, we sped on our way to Abbeville, where a final sketch of the picturesque church of St. Wulfran completed the sum total of our labours. "Better to have seen less and studied more" is the criticism of someone, and possibly a true criticism; but the trip was a very enjoyable one for all that. What is one to do when there are specifications and quantities and ancient lights and such like horrid things dunning and worrying one all day long? What can be better than the putting of all such things on one side, and, with sympathetic companionship, note-book in hand, enjoying the travelling and rapid change of scene which such a week's sketching in Normandy can give?

ARNOLD MITCHELL.

ALMANACS AND DIARIES FOR 1895.

As usual, Messrs. Hudson & Kearns, of 83, Southwark-street, S.E., have sent us a parcel of their diaries and blotting-pads for the present year, the excellencies of which most of our readers must be aware. There are no novel features in either the diaries or pads this year, but novelty without utility in such works no one can desire, and it seems scarcely possible to improve either diaries or pads. In addition, however, to the usual information which each of the diaries contains, including the list of district surveyors for London, and cases tried in the Superior Courts during the legal year, from November, 1893, to August, 1894, a revised list of regulations under the London Building Act of 1894 has been inserted. "The Builder's Diary," No. 11, and the "Diary and Note-book," No. 9, contain much of the information which is to be found in the "Architect's Diary," issued in two sizes, Nos. 12 and 13, but they are specially designed for the use of builders and contractors. In the section devoted to lists of officers of London and provincial architectural and archæological societies there are some unaccountable omissions, several provincial architectural societies not being mentioned; but this appears to be the only defect in these admirable diaries, though we could wish that Messrs. Hudson & Kearns would not insert advertisements with the information which their diaries contain. The same firm also send us some date-indicating blotting-pads, in various styles and sizes, all of which must be exceedingly useful and handy.

"The British Almanac and Companion" for 1895 (London: The Stationers' Company), in addition to the calendar, the usual con-contents relating to public offices and departments, and Acts of Parliament passed in the last Session (with abstracts of the more important ones), contains Mr. R. Langton Cole's usual review of architecture in the past year. The article, which describes most of the more important buildings erected or being erected in London and the provinces during the year, after referring to Mr. Beresford Pite's recent address to members of the Architectural Association, proceeds as follows:—"An echo of the self-same feeling comes from an architectural school in the Colonies, where, we are told, the students are taught to study the principles of beauty in architecture rather than the forms which the application of such principles have produced in the past—a course so distinctly practical that it must commend itself to all. That an increasing number of new buildings are being erected in harmony with these ideas is obvious, and that the change is welcome will be denied by few. 'Style,' rigid, inexorable, founded on precedent alone, is less than ever in evidence, and a modern architecture is taking its place, framing its designs on an expression of the structure, and clothing it with varied ornament, new as well as old." The same work also contains articles on Art, by Mr. Cosmo Monkhouse; Engineering, by Mr. Langton Cole; and Science, by Mr. E. W. Maunder.

From Messrs. W. H. & L. Collingridge (*City Press* Office, Aldersgate-street) we have received "The City Diary, 1895," a convenient and handy little annual, containing much information specially relating to the Corporation of London and to City institutions. This is its thirty-second year of publication.

"The Railway Diary and Officials' Directory" (London: McCorquodale & Co., Limited) for 1895 is a useful work, containing a great deal of information as to traffic returns, accounts, dividends, list of officials, &c. "The Railway Almanac," issued by the same publishers, is a useful sheet of information.

"Calvert's Mechanics' Almanac and Workshop Companion" (London: John Heywood) for 1895 is the twenty-second annual issue of a very useful little work, containing information of especial interest to artisans and handicraftsmen. The work is illustrated with diagrams, and is to be obtained for 4d.

"The Indian Engineer's Diary and Reference Book, 1895" (1, Victoria Mansions, S.W.) is issued at the remarkably-low price of 1s. It contains useful information relating to thermometers and barometers, for the founder and smith, the glazier and painter, plasterers, plumbers, slaters, on hydraulics, water-supply, ropes and chains, besides a great deal of matter of a more general character. An interesting article on "India as a Field for Industrial Enterprise" is given in the diary. The cover of the annual has this year been stamped all over with advertisements—an undesirable departure, in our opinion, though it may be a profitable one.

THE POST OFFICE LONDON DIRECTORY.

"THE Post Office London Directory for 1895" (London: Kelly & Co., Limited), is the ninety-sixth appearance of that indispensable and increasingly-bulky work. It is, as usual, corrected close up to date, and though no new feature has been introduced in the present edition, a very large number of telegraphic addresses and telephone numbers have been inserted in the Commercial division, showing a considerable increase over former editions. It is hoped to secure for future issues the registered telegraphic address and telephone number of every business house and professional man of any standing. The map is again strengthened by being mounted on linen, and the Directory has increased by ninety pages (2,973 pages against 2,883). As we remarked when reviewing the Directory last year, it is singularly free from mistakes, and the one or two literal errors which we noticed in the previous edition have been corrected in the present one.

STUDENTS' DRAWINGS FOR PRIZES AT THE INSTITUTE.

As the announcement of the awards in the various Students' competitions will be made at the Institute meeting on Monday night, we may mention that it is always a pleasure to us to publish any of the designs to which the more important prizes are awarded, and if any of the authors of such designs wish for their publication in our pages, they have only to send their drawings. It seems desirable that it should be understood that we are not any less interested in Students' Designs, or less willing to find place for them, than those who adopt a system of "touting" for them which we do not wish to employ.

Illustrations.

MONUMENT TO DUBAN AT THE ÉCOLE DES BEAUX-ARTS, PARIS.

WE referred recently to the erection and inauguration of this monument to one of the most eminent French architects of modern times, of which we give this week an illustration reproduced from a photograph specially taken for the *Builder*. The monument is situated in the vestibule immediately preceding the theatre (the "Hemi-cycle") made famous by Delaroche's great painting. The treatment, as will be seen from the illustration, is of rather a novel kind, and is a good illustration of the refined taste which our French neighbours exhibit nowhere more frequently than in the design of personal monuments.

The architectural erection terminating in a pediment, which forms the background to the bust of Duban, is in white marble, the upper portion being relieved against a gold mosaic ground, adorned with ornament of a Greek type executed in coloured mosaic. A pretty figure of a child appears to hold up, caryatid-fashion, the corbel carrying the bronze bust. The marble panels on either side are carved in low relief, the one with a Doric capital and some emblems of the architectural workshop, the other with a palm branch and a list of the principal buildings constructed or restored by Duban; the list including the École des Beaux-Arts, the Louvre, the Château of Blois, the Sainte Chapelle, the Hôtel de Pourtales; to which are added the dates of his birth and death (1797-1870).

The architectural portion of the design is the work of M. Bernier, and the bust is by M. E. Guillaume.

"SO SIR LAUNCELOT TOOK SHIP AND WENT OVER TO FRANCE."

IN asking Mr. Patten Wilson, whose clever and original drawings in black and white of Mediæval subjects had attracted our attention, to make a drawing of such a subject for our New Year's number, we had naturally assumed that he would have chosen a subject in which architecture was a prominent feature, though we did not make any special stipulation to that effect. We do not think, however, that any apology is necessary to our architectural readers for presenting them with Mr. Wilson's powerful and picturesque study of a ship of the period of the Arthurian legend. If not architectural, it is at heart archæological and constructive.

The dragon at the stern was, of course, the emblem of Arthur's rule—

"The dragon of the great Pendragonship"*—

the ship being one of the "King's ships" of the time. The provision for lighting the landing-stage at night is seen in the fire-grate or cresset fixed on the top of its timber supports; and in the foreground Sir Launcelot's luggage is conspicuous by the heraldic lions embroidered on the coverings. Whether Sir Launcelot, who is seen leaning on the mooring-post by the ship, really "took ship" in complete armour, may perhaps be questioned; there was probably, even in Arthurian days, something analogous to the tweed suit for such occasions.

The choice of the subject coincides rather oddly with the fact that five of our other illustrations represent French work, ancient or modern; but the symbolism is accidental, not designed, and it is not to be assumed that Sir Launcelot "went over to France" because he was discontented with English architecture.

We hope that on another occasion Mr. Wilson will give our readers his idea of a castle of Arthurian legend.

RICHMOND PALACE.

IN our description of Nonsuch Palace, we pointed out that very little history was attached to that building. It is, however, quite a different case with Richmond. After the Tower, Windsor, and Westminster, Richmond was the most historic of all the royal palaces in this country. It came, however, to be looked upon rather as a fatal residence, from the number of kings and queens who died within its walls. They were Edward III. in 1377; Queen Anne of Bohemia, wife of Richard II., in 1394; Henry VII., 1509; and Queen Elizabeth, 1603. I think Henry Prince of Wales, son of James I., also died at Richmond.

Richmond, or, as it was formerly called, Sheen, appears to have passed into the hands of the Crown in the time of Edward I. The Palace was rebuilt by Henry V. In 1499 it was destroyed by fire, and immediately after rebuilt, but was again destroyed, or greatly injured by fire in 1509. A commission was issued in 1649 to value the building for the purposes of pulling it down. This act of Vandalism was not, however, perpetrated at that time, and the account left by the Commissioners is remarkably interesting, as it gives us the names, positions, and, in most cases, the measurements of the principal apartments.

James II. appears to have been the last king who regularly inhabited Richmond Palace, and probably the long range of buildings on the left upon passing through the gateway from Richmond-green, are his work.

Very little of the old palace now remains; it has been destroyed bit by bit since the time of James II. The arch of the principal gate, with the much-decayed scutcheon of Henry VII., and a building on the left of the gateway, with a semi-decagonal projecting bow and brick walls, ornamented with a portcullis, in black headers (one of the cognisances of Henry VII.), is, for the most part, original. Within the great court also a little gabled structure adjoining the gate to the left is partly old. The footings of old stone buildings can be traced all along the opposite side of the court. This range of buildings, we are informed by the report of the Commissioners, consisted of the "Middle Tower," or gate leading to the inner court, a building containing the stairs leading to the great hall, and the Lord Chamberlain's lodgings. The hall and chapel were on opposite sides of the inner court, and were, like all the inner court and principal buildings of the palace, built of cut stone. The hall was 100 ft. long and 40 ft. broad; it had a clock-turret over the east (or rather north-east) gable, and a louvre in the centre. The chapel, which was on the opposite side of the inner court, was 96 ft. by 30 ft.,* and was on the second story, with the wine-cellar and lodgings of the grooms-porters, below it. It was furnished with "cathedral seats and pews" (probably stalls), "fayr lights" (stained glass), and "a fayr case of carved work for a payr of organs."† The west (south-west) side of the inner court was formed by two stone galleries, one over the other, and to the west (south-west) was the magnificent range of buildings containing the privy lodgings, or apartments. The report tells us that this structure was all of stone, roofed with lead, three stories high, with twelve great rooms in each story.

"The middle storie contayns one room called the lobby, arched over head (vaulted), and covered with lead." In the middle of the roof is a fayr lanthorn, "fourteen turrets all covered with lead," and in the middle is a court, 40 ft. long and 24 ft. broad, which renders the rooms which lie inwards light and pleasant. One round (twelve-sided?) structure of freestone, called the "canted tower," four stories high, covered with lead, and embattled; the lower story containing a cellar, four large rooms over it, one above the other, and a stone staircase of 120 steps. "This tower is the chief ornament unto the whole fabrick of Richmond-court."

The fourteen turrets covered with lead are said to have been "a very graceful ornament to the whole house and perspicuous to the country round about."

To the north-west of the great hall was the liverie kitchen, "with a great spired turet of lead and four ranges," attached to which was a courtyard of brick containing the offices. On the opposite side was "the privy garden," enclosed by a great gallery running from the "privy building" eastward, 200 ft. long; by the chapel and buildings of the great court on its north-west side, and by the buildings which still partly exist on the north-east, so that in reality the privy garden was enclosed within a vast courtyard. In the south corner near the privy apartments was a very small house of Observant Friars, who served the chapel of the palace. The site is still called "The Friars." After the Reformation this building was let out as a chandler's-shop, which is strange after the experiences of fire which they had gone through at the palace.

There are a fairly good number of views of the old palace extant. The earliest is probably that engraved by Jodoc Hondius, dated 1610, in Speede's "Surry." This is from the river, and shows the privy apartments and hall. In Aubrey's "Surrey" is a much more accurate-looking view, engraved by Gotch, showing, in addition to the above, the "liverie kitchen" and offices. The almonry is shown in ruins some way to the left of the kitchen.

There is a large engraving by Basire, 1765, in "Vetusta Monumenta," the architecture very coarsely and incorrectly represented. Curiously the "canted tower" is here represented as round, though it is distinctly polygonal in Aubrey's view! The great kitchen is very distinctly shown, and the friary at the opposite end. This engraving is from a picture "in the possession of the Earl of Cardigan."

A second engraving representing the palace from the Green, engraved by Basire, from a picture "in the possession of Lord Fitzwilliam," is given in "Vetusta Monumenta." Lysons doubts about this view, and thinks it does not represent Richmond Palace, but we see no reason whatever for this. The gate, "the middle tower," the "canted tower," &c., are all shown, though not in the most correct perspective.

It is indeed sad to think that so fine a palace should now only be represented by a ruined archway and a few brick walls converted to the use of ordinary dwelling-houses.

H. W. B.

VIEW AND PLAN OF FOUNTAINS ABBEY.

THESE, which form number VIII. of our series of illustrations of Abbeys of Great Britain, are treated of in the leading article on another page.

The plan is reproduced, by the kind permission of Mr. J. Arthur Reeve, from the one given in his monumental work on Fountains Abbey, referred to at the close of our leading article. The view is made, as usual, expressly for our series of Abbey illustrations, and is taken from nearly the extreme east end of the building; one of the two central piers of the Nine Altars Chapel appearing in the foreground of the picture.

WHITBY ABBEY.

THIS view of Whitby Abbey was sent to us by Mr. Slater at the same time with his other drawing of the Abbey, which was published in the *Builder* of Oct. 6, 1894, as one of the series of illustrations of the "Abbeys of Great Britain." We could not find space for both drawings at that time; but considering the extra drawing of Whitby was too good a one to lose, we give it as an addition to our illustrations in the present number.

THE NAVE, MILAN CATHEDRAL.

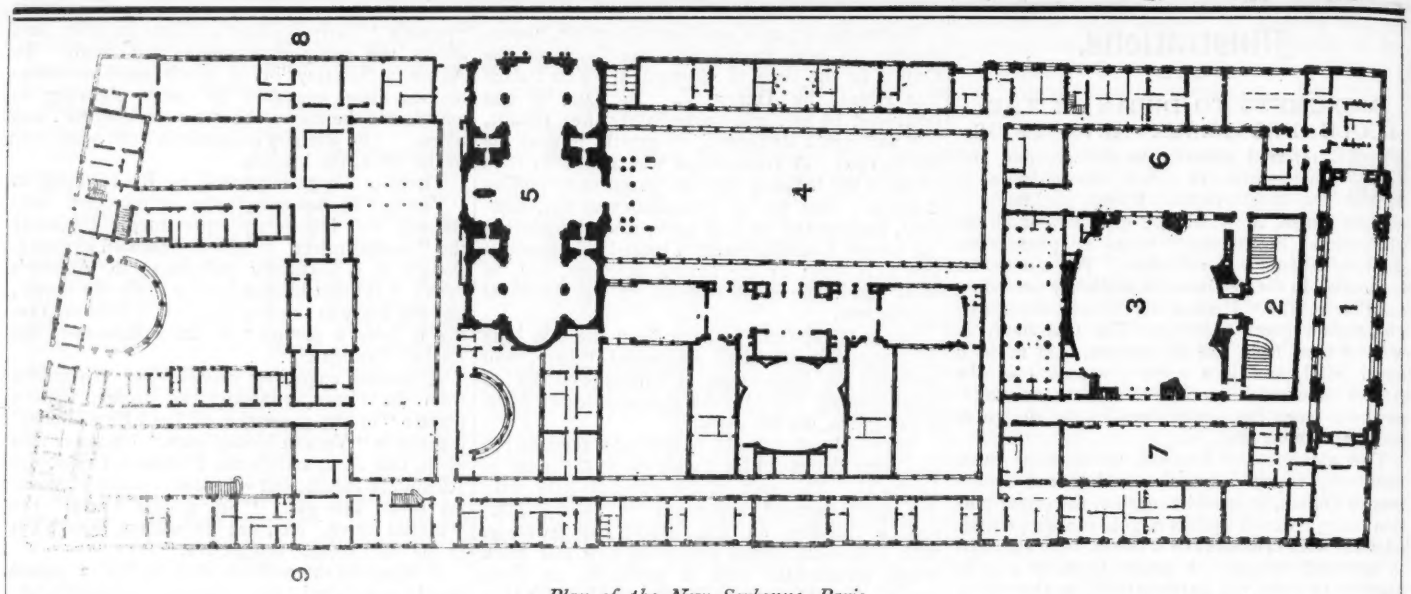
THE nave of Milan is perhaps the most impressive part of one of the largest churches in the world. It is about 55 ft. wide and 160 ft. high. The vaulting is painted in imitation of carved stone, but this decoration has now much perished. The church was founded about 1386 by Gian Galeazzo Visconti, and was built of marble by German and Italian artists. It was consecrated by San Carlo Borromeo in 1577. The west *façade* was not finished until the time of Napoleon; when it was left as a very mixed and incongruous piece of architecture, a medley of Gothic and Renaissance detail. As we need hardly remind our readers, the front was to have been rebuilt, and a great competition was held for this purpose. The death of the talented young architect whose design was selected seems, however, to have brought everything to a standstill, and it is doubtful whether the rebuilding of the *façade* will now be carried out at all.

Milan Cathedral is a remarkable instance of a building which commands great and general admiration (though perhaps more from the general public than from architects) in spite of a very corrupt style and very bad detail. The painted tracery on the vaults, to which reference has been made, is in itself a proof how little the true spirit of architectural work was appreciated by those who erected the building. Yet Milan has secured general admiration and even enthusiasm by mere dint of great scale and lavish richness of detail. It is a kind of building which seems to assert its right to be, if not above, at least on one side of, the severe standard of architectural criticism. If it is not altogether satisfactory as architecture, it at all events makes a rich and sumptuous architectural picture, such as inspired our late great Poet-Laureate with a verse which will last as long as the English language lasts, and which is so familiar by constant quotation that we need do no more than refer to it here.

dylls: "Guinevere."

* Lysons says it was 40 ft. wide, but in the "Monumenta Vetasta," which he quotes, it is stated to have been 30 ft. wide.

† "A payr of organs" simply means an organ. See Hill's "Organ-cases and Organs of the Middle Ages."



Plan of the New Sorbonne, Paris.

1 Grand Vestibule.
2 Grand Staircase.
3 Large Theatre.
4 Principal Courtyard.
5 Chapel of the Sorbonne.
6 Secretary of the Faculté des Arts.
7 Secretary of the Faculté des Sciences.
8 Faculté des Lettres.
9 Faculté des Sciences.

THE NEW SORBONNE, PARIS.

THE new Sorbonne buildings at Paris, of which a plan is subjoined, and of which three illustrations are published among the plates in our present issue, have been carried out by M. Nenot, a former pupil of M. Questel and M. Pascal, who obtained the commission as the result of a competition instituted by the Municipality of Paris, in which twenty-eight architects took part. The cost of the buildings has been borne partly by the State, partly by the Municipality of Paris. The latter body has in addition undertaken the cost of the sculptural decoration, which up to the present date has amounted to 155,000 fr. The cost of all the pictorial decoration has been borne by the Ministry of Fine Arts.

The building, bounded by the Rue St. Jacques, Rue des coles, Rue Sorbonne, and the Lycée Louis le Grand (or perhaps we should rather say by the Rue Cujas), occupies a superficial area of 23,590 square mètres. The establishment includes within its walls the Académie of Paris and the "Faculties" of Literature, Science, and Theology.

The large theatre, of which a view is given, is reserved for University gatherings and solemnities. It will seat 3,000 persons, and is decorated with a very large painting by M. Puvis de Chavannes. The ceiling medallions in each bay are by M. V. Galland. The niches between the galleries are adorned by six statues: "Rollin," by M. Chaplain; "Descartes," by M. Coutan; "Robert Sorbon," by M. Crank; "Lavoisier," by M. Dalou; "Pascal," by M. Barrias; and "Richelieu," by M. A. Lanson. There are two other theatres set apart for the Service of Free Education.

The department of the "Faculté des Lettres" includes, besides the examination rooms, the halls for lectures and study, and five theatres for the public.

The Faculté des Sciences has no less than ten theatres; three for mathematics, three for chemistry, one for geology and mineralogy, one for natural science, one for physiology, and one for physical science. The Faculté de Théologie has two theatres. The whole twenty theatres can accommodate altogether about 10,000 persons, besides the seat room in the examination halls, which are also accessible to the public.

Independently of the large theatre (the one represented in one of our plates) the artistic decoration of the building may be grouped as follows:—

Sculpture.—Principal façade, two large pediment subjects, by M. Mercié and M. Chapu, representing Science and Literature. Eight allegorical statues above the attic, viz.:—"Chemistry," by M. Injalbert; "Natural History," by M. Carlier; "Physics," by M. Albert Lefeuvre; "Mathematics," by M. Suchetet; "History," by M. Cordonnier; "Geography," by M. Marqueste; "Philosophy," by M. Longepied; and "Archæology," by M. Paris. In the grand vestibule there are: "Homer," by M. Delaplanche (the figure shown on the right of our view of the vestibule), and "Archimedes," by M. Falguière. On the grand staircase: "The Republic," by M. Delhomme. In the Rector's vestibule: "The University of France," a seated figure, by M. Allar.

Painting.—On the grand staircase: "Les Fastes de la Faculté des Lettres," by M. François Flameng, and "Les Fastes de la Faculté des Sciences," by M. Chartran. In the Academie Council-room: five large panels by M. Benjamin Constant (the largest of these, giving the portraits of the Rector and of the Deans of Faculties, was illustrated in the *Builder* some time ago). In the adjacent Salons: Two large panels by MM. Weneker and Lerolle, representing respectively "The Laying of the First Stone of the Sorbonne," and "Albert the Great and his Pupils." In the Reception-room, paintings by M. Cazin; in the Rector's dining-room, allegorical paintings by M. Raphael Collin; in the Salle des Actes, paintings by MM. Duez and Jobbé-Duval; and in the Committee-rooms, large compositions by M. L'hermitte and M. Roll.

The vestibule to the grand staircase, which forms the subject of one of our illustrations, opens from the principle façade towards the Rue des Écoles. On its right opens a long gallery forming the corridor of communication for the Faculté des Lettres; on the left, a parallel gallery communicates with the department of the Faculté des Sciences. Part of the grand staircase is seen through the arcades.

The old chapel of the Sorbonne has been retained among the new buildings (see plan). It contains, among other objects of interest, the splendid tomb of Richelieu, sculptured by Girardon, after the designs of Lebrun.*

The illustrations of the new buildings are from photographs specially taken for us, and the plan is reproduced from one kindly sent to us by M. Nenot, the architect.

* Some information as to the secret chapels in the piers carrying the dome will be found in a letter by J. A. Randolph, accompanied by a sketch plan, published in the *Builder* of March 31, 1894.

THE NEW HAMBURG TOWN HALL.

THE site for the new Hamburg Town Hall has been the subject of incessant discussion for the last fifty years. And even now that the pile is nearing its completion the citizens cannot desist from constantly debating on the pros and cons which governed the decision of their senators when choosing the ground some ten years back.

The great Hamburg fire which destroyed the old Town Hall, and with it over twelve hundred houses, occurred in 1842. Almost directly after this catastrophe, the special commission, which was entrusted with the remodelling of the city, had to face the difficulty of finding a suitable site for the Hôtel de Ville, proposed at the time, which was to contain the administrative offices, as well as legislative chambers and reception halls, of the historical Hanse State. Mr. William Lindley, acting as chief architect and engineer for the Hamburg Senate, Sir Gilbert Scott, who was entrusted with the re-erection of the St. Nicholas Church at Hamburg, and Herr Gottfried Semper, among others, were consulted, and we give blocks showing Lindley's and Semper's ideas as to the position (figs. 1 and 2).

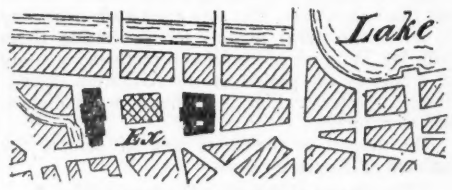


Fig. 1.—Lindley's Proposal.

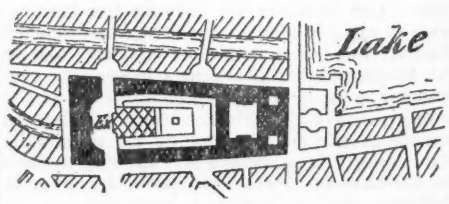


Fig. 2.—Semper's Proposal.

Semper, as will be seen, had an ambitious scheme of a "forum," around which he intended to group all the more important public buildings which had to be replaced.

The existing Exchange building (erected 1839), though completely surrounded by the fire, had

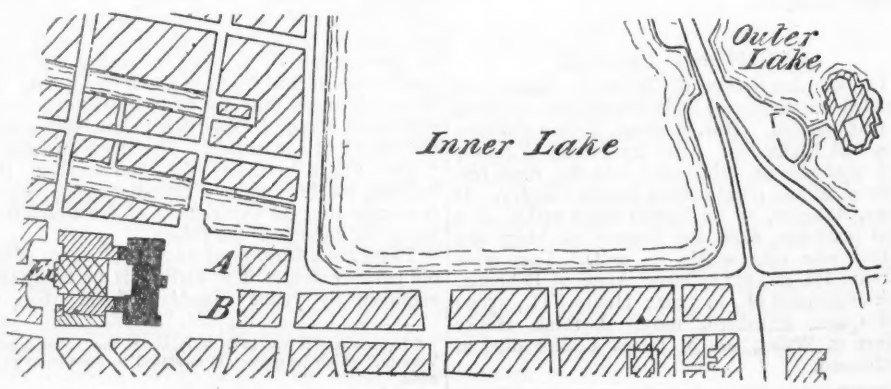
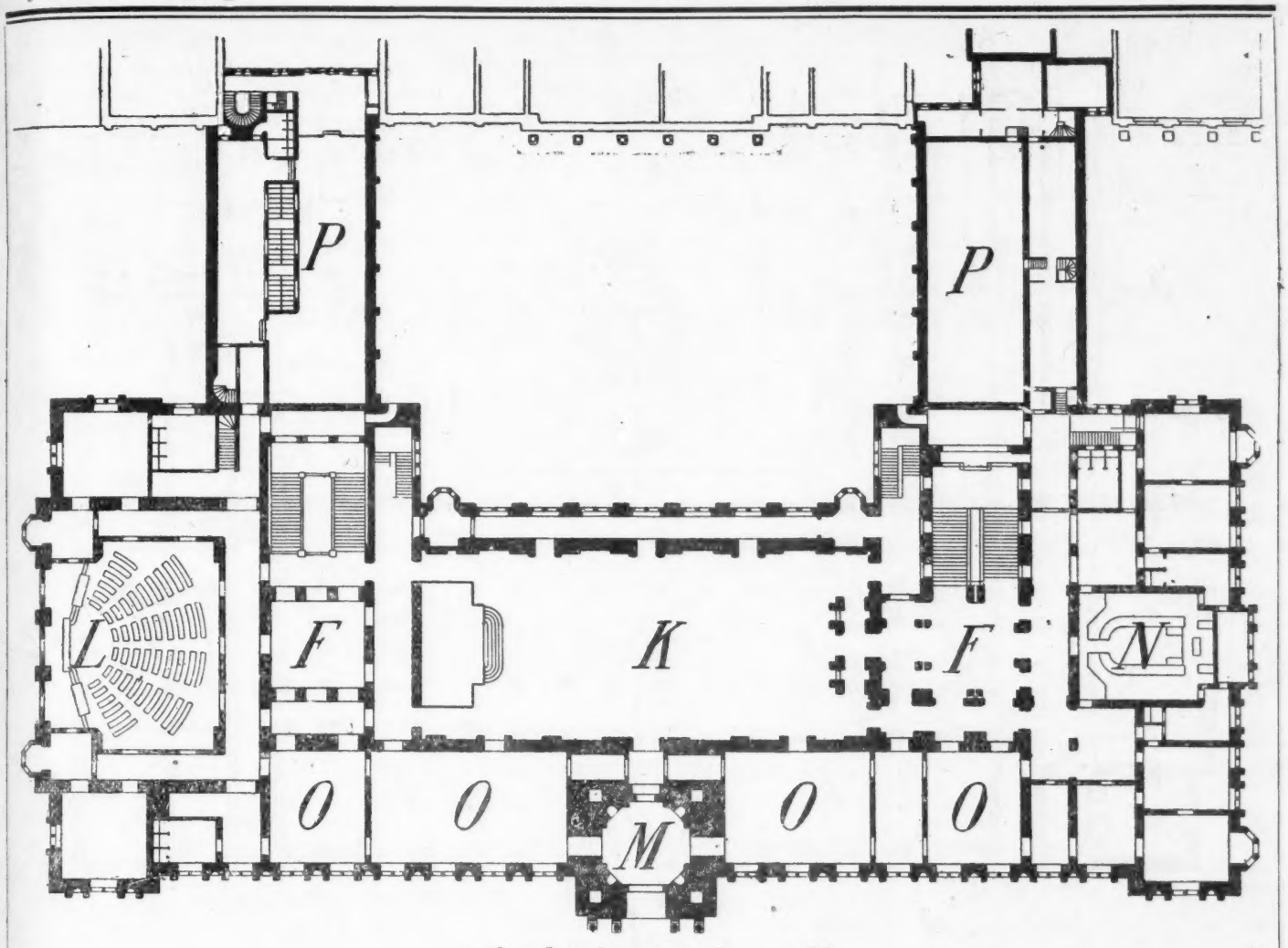


Fig. 3.—The site as arranged.



Hamburg Town Hall.—Plan of Principal Floor.

F Grand Staircases.
K Grand Central Hall.
L Council Chamber (Common Council).
N Council Chamber (Senate).
M Ante-Room.
O Committee Rooms.
P Offices

been saved by a spirited party of citizens, and there was always an intention of having the new Town Hall in possible proximity to what is practically the seat or heart of Hamburg life. As the Exchange was a low building, of good Italian Renaissance style, treated very lightly, and a Hôtel de Ville for a Hanse city must apparently necessarily be a ponderous block, showing the scrolled "German Renaissance" lines, there was always the difficulty of an unpleasant contrast to be feared; whether the blocks stood side by side, or opposite, or had to be contiguous, the difficulty remained. The final decision was to put the buildings back to back with a spacious courtyard between them, but the wings joined. Placing the buildings back to back was certainly a good expedient, but we doubt the advisability of having attempted to join the wings. Seen together the side frontages contrast oddly, and the Exchange is entirely dwarfed. The same remark holds good for the appearance of the side elevation of the courtyard, though perhaps in a lesser degree.

The actual position and aspect of the new Town Hall is shown in fig. 3. The Exchange faces a crescent, and the Town Hall has its main frontage on a market-place, measuring about 100 yds. by 150 yds. The thoroughfares on either side of the block are 65 ft. wide. The building can certainly be seen with advantage from several points, and the glimpse of the Alster Lake to be had from some of the windows is pretty. Both aspect and view would, however, be greatly improved if the houses marked "A" were removed, and preferably also those marked "B." This will probably be done when the Hamburg exchequer is in a more satisfactory condition.

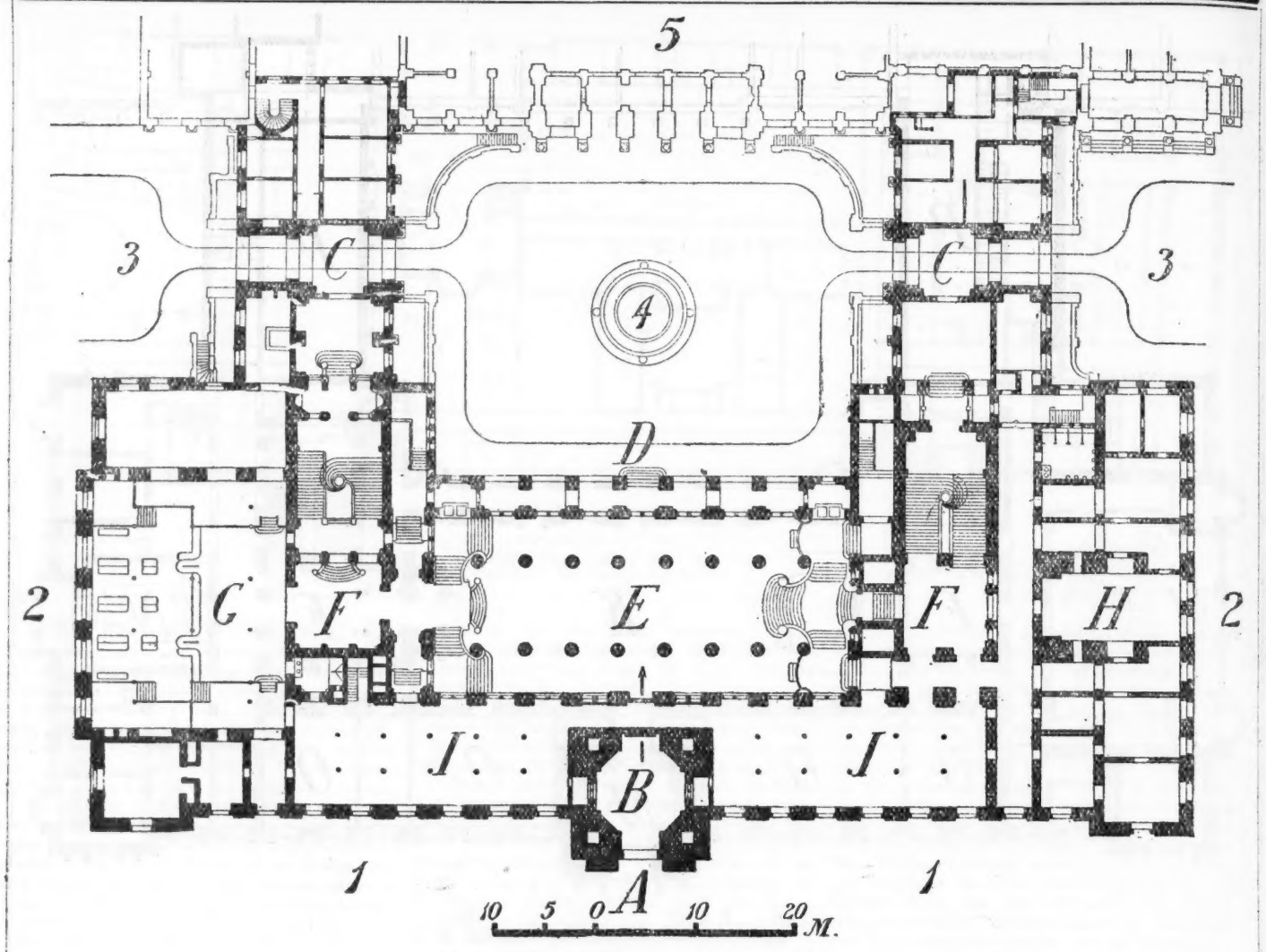
The requirements to be fulfilled by the new Town Hall, and its design, were the outcome of much tedious controversy for full thirty years (1855-1885). There was a great international competition for the design in 1856, when the housing of all the administrative departments was required, as well as the legislative chambers and reception-halls. Forty-four architects competed, and Sir Gilbert Scott received the first premium. After much wrangling, and a postponement of the question during the wars of 1864, 1866, and 1870, there was again a competition in 1876, in which Messrs Mylius and Bluntschli received the first premium. A number of Hamburg architects received minor awards on this occasion. In this instance only a part of the administrative offices had to be found room for. The winners were then invited to revise their design, but owing partly to the difference of opinion as to the object of the block, and the opposition by local men, Messrs. Mylius and Bluntschli were unsuccessful in obtaining the commission.

To guard against an outsider getting the commission, and also to put an end to professional rivalries, for which Hamburg is noted, the nine leading architects of the city joined hands in 1880, and prepared a joint design for the Hôtel de Ville. The "programme" they had themselves prepared wisely limited the accommodation to two council chambers, a large central hall, ample *foyers*, and the necessary offices for one or two of the principal departments only (Secretary's Office, Finance Department). Most of the administrative offices were to have their own buildings close by. These were to have the character of office blocks only, whilst the Hôtel de Ville was to be the "show-place" of the city. Again there was opposition, an architect who had a seat in the Common Council distinguishing himself by a vigorous and unprofessional attack on his *confrères* who were submitting the design. Finally, the proposals were, however, accepted, and in 1885 230,000*l.* was voted for the cost of the building, and the joint architects formally commissioned to commence the works. Messrs. Grotjan, Haller, Hanssen, Hauers, Lamprecht, Meerwein, Robertson, Stammann, and Zinnow designed the building. Of these, Messrs. Robertson and Lamprecht died before the foundation-stone was laid. A committee of seven has hence had charge of the final revision of the design and superintendence of the works. Of these, Herr Haller was elected to practically act as architect-in-chief. A joint works-office was formed, and Herr Geissler engaged as manager. Any supervision on behalf of the authorities was entrusted to the City Architect, Herr Zimmermann, and Messrs. Hennicke and Gros were retained as consulting engineers.

The main floor of the new building, which is some 33 ft. above the street-level, contains the Council Chamber of the Senate (N) on the one side, and the large Common Council Room (L), measuring about 66 ft. by 44 ft., on the other. Each has its own grand staircase (FF), but both staircases serve as the approach to the great central hall, the principal feature of the Hôtel de Ville. This hall (K) measures some 130 ft. by 65 ft., and is about 48 ft. high, and, as will be seen from the plan, it is lighted by a row of seven large windows, looking out on to the courtyard. Their sills are about 16 ft. above the floor, so that a high side-light is obtained. There are recessed galleries on three sides. Off the central hall, with a frontage to the market-square, are the principal committee-rooms (OO), with some offices close at hand. The turret-chamber (M) has been used as an antechamber to the committee-rooms. The two wings are completely taken up by offices (PP).

Part of the ground-floor is only a few inches above the street level, and here the full height possible under a main floor has been made use of. Part of it is, however, cut up into a lofty basement, and an entresol. The great vestibule, which is vaulted, takes up the full height. Its main approach is from the market-place, through an outer vestibule (B) under the tower. There is a second approach from the courtyard, with a long open porch (D). Carriages can drive through the courtyard, and "put down" rapidly. On either side of the vestibule flights of steps lead to the grand staircases referred to. These have separate entrances (CC) off the *porte-cochères*, which lead to the courtyard. Off the one staircase, on the entresol level, a spacious reception-room (H) has been planned. This is specially reserved for hearing deputations and receiving distinguished strangers. Off the other the pay-office of the house exchequer (G) takes a prominent position. A number of offices (II) have been found room for, facing the market-place and side thoroughfares.

It would lead too far to refer to the other parts of the plan, and we need only mention that the Hanse "Rathskeller," with its spacious wine-cellars, has not been forgotten. Much room is



Hamburg Town Hall.—Plan of Ground Floor.

1 Market Place.
2 65-ft. Roads.
3 Forecourt.
4 Courtyard.
5 The Exchange.

A Main Entrance.
B Outer Vestibule.
C Side Entrances.
D Back Entrance.
E Grand Vestibule.

F Grand Staircases.
G Pay Office (*entresol*).
H Reception Room (*entresol*)
I Offices (*entresol*).

taken up in a second basement for the extensive warming and ventilation arrangements.

Structurally there is little of interest in the building excepting the foundations. The block stands on a platform of concrete 39 in. thick, which is supported by 4,000 piles of an average length of 36 ft. The unnecessary thickness of the walls, and quantity of material in many parts, speak of much waste from an English architect's point of view, and a public body in this country would also grumble at the amount of waste space in the building.

The architectural treatment of the exterior of the block is exhibited in our illustration. The material of the façades is sandstone, in several tints, slightly picked out with gold. The plinth, however, is of Bornholm granite. The main entablature is about 75 ft. above the pavement level, and the top of the tower, nearly 325 ft. high. Much of the carved decoration is from Herr Peiffer's *atelier*. The figures are by Berlin, Hamburg, and Munich sculptors of standing. As to the interior, little can be said at present, excepting that the finest hard-woods are to be used, and the style will be similar to that of the exterior. The grand vestibule, which is entirely of sandstone, and is nearly finished, promises well, and the wine-cellars will certainly not be the least interesting feature of the building.

As regards the cost, in 1885 the estimates were limited to 250,000*l.*, and in 1889 the amount was increased to 330,000*l.* Particulars of the expenditure up to date are not forthcoming, but including all sculpture, the fresco decoration, and the furnishing, 500,000*l.* will approximately cover the cost. At present there is some talk of the missing thousands being subscribed by the leading citizens of the town. Part of the block, with the Council-chambers and offices, will be ready for use next year. The central hall, however, is not likely to be opened until 1900.

ST. SAVIOUR'S CHURCH, SOUTHWARK.

THE ancient nave of St. Saviour's, after many changes and various reparations, fell into a state of great dilapidation in the early part of this century, and having stood roofless for seven years, was finally pulled down in 1830 to make room for the structure which has itself been lately removed to admit of the construction of a nave and aisles, which might be used with the choir and transepts as one church.

The late nave, built with a floor 9 ft. above that of the transepts, could never have been so used, even if its architecture had been of a suitable or worthy character.

The new nave has been built entirely on the original foundations, which were condemned as unsafe by the destroyers of the old one, although they themselves subsequently made large use of them. Considerable portions of the original walls and of the ancient details were found *in sitû*, in taking down the modern church. All of these remains have been carefully preserved intact.

The present building is not intended to be an exact copy of the old nave and aisles as they existed at any particular date, but rather, while following the original plan, and carefully preserving and incorporating all existing remains of old work, to be in thorough harmony with the beautiful choir, so well restored by Gwilt before the destruction of the nave, and to be as well adapted as the exigences of the old plan permit to modern requirements.

If an exact restoration of the building as it was at the beginning of this century had been desired, ample material and information for that purpose were to found in Gwilt's elaborate and careful sketches and measurements now preserved in the British Museum. These, with a great deal more interesting matter, have been brought together in a convenient and handy form by Mr. Dollman in his beautiful work on St. Saviour's, to which readers may be referred for a full history of the church.

In the rebuilding Weldon stone has been used externally for the wrought work, the walling being faced with snapped flints. Internally, up to the top of the nave arcade, Ancaster stone is used, and Bath stone above that level. The filling-in of the groining is of chalk, with bands of firestone. The floor is laid throughout with oak-block paving.

In clearing the site previously to building, remains of no less than three old floors were found at different depths, and none of them level. That finally adopted is 18 in. below the floor of the transepts, from which there was one step into the choir. On taking the transepts in hand, however, portions of the original floor were discovered 12 in. below the surface. This level has now been restored, and there will be one step from the nave to the transepts, and three from the transepts to the choir.

The whole of the work has been carried out by Messrs. Rider & Son on a schedule of prices accepted in competition with several other well-known firms.

Mr. T. Simpson is the clerk of the works, and the architect is Sir A. W. Blomfield, A.R.A. The drawing, by Mr. W. Monk, shows the view of the interior of the nave, looking westward.

ENGINEERING SOCIETIES.

INSTITUTION OF CIVIL ENGINEERS.—January 2 was the seventy-seventh anniversary of the establishment of the Institution of Civil Engineers, which was founded for the general advancement of Mechanical Science. It now numbers 1,846 Members, 3,647 Associate Members, 359 Associates, 17 Honorary Members, and 791 students, making a total of 6,660 of all classes.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—At the meeting of the Civil and Mechanical Engineers' Society, held on the 3rd inst., a paper was read by Mr. A. W. Ackermann, entitled "Caissons *versus* Dock-Gates." The author said that caissons were apparently first used in France at the Port of Rochefort in the year 1728 A.D., and that there is some evidence of their having been used at a much earlier date by the Venetian Republic. The early caissons

were constructed of wood and heavily ballasted. Iron caissons were first used at H.M. Dockyard, Woolwich. No great improvement in their design took place until 1865, when the extension works of H.M. Dockyards, Chatham and Portsmouth, were undertaken by Sir Andrew Clarke, R.E., K.C.M.G., Director of Works for the Admiralty. The principles involved in designing caissons were explained. The advantages of caissons over dock-gates were pointed out. The difference between ship and sliding caissons was described, together with details of their construction and the machinery used in connexion with them. The paper was illustrated by diagrams.

INSTITUTION OF JUNIOR ENGINEERS.—On the 15th ult., a party of about seventy members of this institution travelled to Hampton, for the purpose of visiting there the stations of the Southwark and Vauxhall, the Grand Junction, and the West Middlesex Waterworks. They were conducted over by the respective officials. The Southwark and Vauxhall engines consist of two 80-in. Cornish beam, two inverted compound, three direct-acting Cornish, a triple expansion inverted, and an inverted compound, both the latter being geared to and driving two sets of three-throw low-lift pumps. The Grand Junction engines are of the following types:—Direct-acting single Cornish, compound beam, diagonal compound, horizontal compound, Worthington, and centrifugal, the latter being in course of erection. The West Middlesex engines are of the Worthington horizontal and vertical types. For the privileges extended in connexion with the occasion, the thanks of the members were conveyed by Mr. Harry Fraser, member of council.

Correspondence.

To the Editor of THE BUILDER.

THE LATE MR. GRIBBLE AND THE BROMPTON ORATORY.

SIR,—With regard to your notice of the late Mr. Herbert Gribble's connexion with the Brompton Oratory design, I think I am able to say a word or two on the subject.

It was my good fortune to assist Mr. Gribble in the many working drawings forming the contract for this important and unique work, comprising, practically, the whole scheme, which though all included in the original and first estimates, was not all included in the signed contract for the work then executed.

I have no purpose in writing other than to say a word or two of praise for one of the ablest draughtsmen and designers it has been my good fortune to meet. It would indeed not be easy to say in a few words what power of architectural scholarship and dexterity Mr. Gribble possessed.

Every piece of work he took up from the detail most prominent to that which no one would see, received an attentive study and measure of labour which only the enthusiast could bestow. Proud as he might justly have been and was of his facility of expression as a draughtsman, his interest was equally alive in matters of detail and construction. It was, indeed, surprising to watch the progress of his detail drawings. He did not give the impression of being very rapid, and appeared to gain his results rather by patience and persistency. Every point was argued out as he proceeded, and difficulties were at once faced and for ever fought and conquered. His published drawings, notably the sketch from the top of the dome looking down into the church below, was made by him as a recreation, and was not begun till the whole of the detail of that structure was thoroughly familiar to him as a settled and completed task.

As to the more difficult forms of construction with which the church abounds, and which were in effect practical experiments, no one can know how heavily these sometimes weighed upon him. It was no uncommon thing to hear in the morning that he had spent the night sleeplessly in thinking out this or that grave question. When it is remembered, moreover, that such a building as the Oratory was designed and carried out under our present contract system, with the conditions of cost as far as the structure goes reduced to the minimum, it will be readily seen that many questions of experimental construction would strain the strongest nerve, and especially that of a man who had really never before carried out himself any responsible building work. The tie-rods now to be seen in the main roof across the nave were never intended to be left in—and I can only imagine that Mr. Gribble had a very good reason for not taking them out, as he had originally intended doing—after the concrete vault over the nave had settled down to its work. It should also be further remembered here that the problem is a semi-circular cement-concrete vault of 50 ft. clear span, 7 in. thick at the crown and 12 in. thick on the haunches, the whole largely penetrated by cupola-like openings, and the whole placed on the top of the clearstory walls, with no great power of counterforts to resist the outward thrust.

For points of strictly architectural detail and design, such as orders, entablatures, cornices, mouldings, and the like, no one can know the patient trouble and research which led ultimately to a final decision. Several of the same orders of different old masters were placed side by side, drawn to similar scale, and considered in every detail to arrive at a result. The product of all this labour, as expressed in the finished work of the Oratory, seems to me as particularly praiseworthy, the more especially that Mr. Gribble, up to this time, was, if anything, a Gothic man, and this was his really first Classic work.

As I have said, I have been impelled to write this letter only from admiration, and chiefly so for the way in which Mr. Gribble worked to give his clients the best of which he was capable, and also from the very distinct feeling of kindness with which he ever received contributions to his work such as an assistant could give. It is, however, false to suppose that any assistant could ever help such a man beyond a very short limit. He insisted upon and did all his own initiation, and he worked with an enthusiasm which knew no bounds when the interests of the work were concerned.

Personally, I think Mr. Gribble would never have attracted a large race of clients. He was distinctly an uncommercial man, and perhaps his very enthusiasm was not always calculated to inspire the confidence which he really deserved.

I had not seen Mr. Gribble for several years, and the news of his death through your columns came upon me as a great shock. It is a lamentable circumstance for a man of such ripe scholarship and dexterity to be taken away at the early age of forty-seven years.

I enclose my card (not for publication).

"ARCHITECT."

SOUTH SHOEBURY CHURCH.

SIR,—The little-known churches of Essex contain many interesting old features, while the very speech and manners of the inhabitants of the county have changed but little during the last few centuries, so that it would not be at all surprising to find survivals of old ritual arrangements in the churches. In Hadleigh Church, some eight miles distant from Shoebury, there is a fairly early Norman chancel arch with side recesses which may have been intended for the purpose suggested by Mr. S. J. Nicholl in your issue of December 29, and similar specimens exist elsewhere, as, for instance, at Brixworth, Northants.

But the recesses at Shoebury are clearly thirteenth-century insertions in the twelfth-century wall. Now, as Mr. Nicholl says, the Norman credence recess at Castle Rising was disused and turned into an altar recess in the thirteenth century, and this seems to suggest that the old use of such recesses had ceased by that date. Therefore it is hardly likely that niches would have been *inserted* at so late a date in order to serve as credences in this unusual position. Whether the niches in question replace Norman credence niches or not, I cannot venture to say. But in Rainham Church, near Barking, there is a chancel arch exactly like the one at Shoebury, both in proportion and in detail. The arch at Rainham has a thirteenth-century altar recess on the north pier, but there is no visible trace of a corresponding recess on the south side. The work at Rainham so closely resembles that at Shoebury that it seems extremely likely that the two buildings were works of the same designer, and this seems to point to there having been no Norman credences beside the chancel arch at Shoebury. Mr. Nicholl's theory, however, may doubtless explain the singular triple chancel arches at Hadleigh and elsewhere, although I do not think it is a very probable explanation of the example at Shoebury.

CHARLES A. NICHOLSON.

"AN OLD KIRK CHRONICLE."

SIR,—Referring to your review of the Rev. Mr. Waddell's book on Auldhame, Tyninghame, and Whitekirk (page 475 of last volume), and the regret therein expressed that plans and technical descriptions were not included, will you allow me to state that detailed accounts and plans of Tyninghame Priory and Whitekirk were published in Part No. 3 of Vol. II. of the Edinburgh Architectural Association *Transactions*.

Copies of this Part I have no doubt can be procured from the Hon. Secretary, Mr. Thomas Fairbairn, 56, Queen-street, Edinburgh, by anyone desiring them.

Edinburgh, Dec. 31, 1894. G. S. AITKEN.

ARCHITECTURAL STUDENTS AT THE ROYAL ACADEMY.

SIR,—It will interest many of your readers to know that the regulations for admission to the Schools of the Royal Academy have been altered, and that architect-students are now eligible for admission who are not more than twenty-five years of age on the date fixed for the delivery at the Academy of works for probationership.

This will be found a great boon to many now that the range of study required of the young architect is so extensive.

Instruction in the Academy is gratuitous.

THOMAS H. WATSON.

The Student's Column.

BRICKS AND TERRA-COTTA.—I.

INTRODUCTION.

THE literature relating to bricks and terra-cotta is fairly extensive, but, practically nothing has been written on the subject, as a whole, in recent years, at least in England. Works on building materials generally have appeared from time to time, it is true, but these, for the most part, do not contain sufficiently detailed information, and add very little to our previous knowledge. Moreover, certain phases connected with it have never received consideration in any paper or book, though questions have frequently arisen thereon. It is impossible in the limited space at our disposal to write a text-book on either bricks or terra-cotta, and we shall not attempt anything of the kind. Certain facts concerning both these materials are well known to every student of architecture, and if they were not, any good book on building construction would suffice to supply the information. These topics, therefore, we have no occasion to touch upon. We cannot pretend to give the student a full bibliography, which would consist almost entirely of the enumeration of short articles and papers read before societies specially interested in these materials; but we hope to do justice to every original observer whose discoveries may be referred to, and we shall, naturally, quote the sources of origin of such references.

The *raison d'être* of this series of articles is to give a general account of the principal varieties of English bricks and terra-cotta, and, where there would seem to be any substantial advantage by so doing, to say something concerning them as manufactured abroad. We have stated that certain phases of the subject have never received consideration; it is to these that we shall specially direct the student's attention. They relate almost exclusively to our own investigations, and will form the most important original part of our present contribution to the literature on these building materials.

Bricks and terra-cotta may be considered from many points of view, the principal amongst which, for our purposes, are the following:—The raw earths; the methods of preparing them in the initial stages of manufacture; the machinery or means adopted of fashioning the prepared earths; and the way in which the fashioned products are dried, built up in the kiln and burnt. To properly understand these various processes it is necessary to possess some knowledge of chemistry, physics, mineralogy and metallurgy—at least in so far as the scientific preparation and burning of the raw materials are concerned. Many points important to the intelligent manufacturer must of necessity be treated here as briefly as possible, and only then with the ultimate view of enabling the architectural student to understand certain phenomena connected with the behaviour of the materials under definite circumstances. In our general preliminary observations, dealing with the raw materials of which bricks and terra-cotta are made, the two substances will be considered together, but subsequently, after running side by side parallel to each other for some time, they will be made to bifurcate, the bricks going one route and the terra-cotta another.

Then we shall describe in succession various chemico-metallurgical processes in so far as they affect the quality of both bricks and terra-cotta. The physical and other scientific attributes of the finished materials will be dealt with at some length, and will include a particular account of the strength of different kinds of bricks, showing the effects produced by divers methods of manufacture, especially in regard to shape. Their absorptive qualities will occupy some space, as also will their behaviour under varying temperatures, during conflagrations, &c., and in this connexion we shall introduce the results of many original experiments. In regard to brickwork, we shall not attempt anything like an essay on this subject, though it is our intention to treat of the strength of brick piers, walls, &c.—so far as that is known—and then we must say a few words respecting the influence of mortars and cements on the strength and bending of brick structures. Refractory substances, fire-clays, and the like will be alluded to not only in their capacity of producing ordinary building bricks,

but of special kinds for the lining of furnaces. We shall have to point out the geographical distribution of the principal brick-earths in England, and shall divide these into several groups, corresponding as nearly as may be with the centres of the burnt goods industry. We can barely touch on the influence of brick-earths in moulding the architecture of their immediate vicinity, though this is a subject that would well repay careful study.

Considerable space will be devoted to an account of the initial stages in the manufacture of both bricks and terra-cotta, and all the essential details prior to the actual burning will be explained. It is curious, but is, nevertheless, a fact, that the earths employed, and which, therefore, form the substance or body of the whole of the materials concerned, constitute the least understood section of the subject. This does not seem to be generally recognised, if we may judge from queries and observations made by competent persons during the past few years. You may elaborate the methods of preparation of these earths as much as you like; you may expend all your mechanical genius in inventing machinery to fashion various kinds of bricks in the shortest possible time; and you may know the "crushing weight" and tensile strength of every principal kind of brick in the universe; but unless you are cognisant of the precise nature of the raw materials used in the first place you will not make a first-class brick-manufacturer, nor produce a material sufficiently reliable in shape or colour for use in the better class of edifices. You may possess raw earths suitable for the best kinds of goods, and not know it. The architect ought to be extremely careful in purchasing bricks from those who do not possess the qualifications for manufacturing them homogeneously, and so that they shall be uniformly good. It is not too much to say that many brickmakers work only by "rule of thumb," and have not the slightest conception of the principles which underlie the various processes they adopt; the result of this is, that when the character of the raw earths used slightly changes (as it is very apt to do when worked over extensive fields) the quality of the bricks changes also without the manufacturer being able to control the matter, or even to turn the change to account where that might be done. The kind of experience gained by burning tens of thousands of bricks leads to the detection of little peculiarities attending their expansion, contraction, or warping, and is useful enough in its way, but it gains tenfold in usefulness when this knowledge is supplemented by a definite understanding as to the causes of those peculiarities. The principal modifications adopted in the manufacture of bricks during the last half-century are the outcome of scientific investigation, and were deliberately planned to bring about the results achieved.

A knowledge of the chemical properties of the earths is indispensably necessary, but we trust that very little notice will be taken of the majority of the commercial analyses distributed by brick merchants. They are all very well to give a general idea of the composition of the brick-earths used; when applied to the subject practically, however, they are found lacking in many important points, and can never take rank with a truly scientific chemical investigation. The microscope, as we shall show, may be employed to advantage in ascertaining the mineral nature of clays, and this, combined with the necessary chemical knowledge, will assist wonderfully in predicting the results of burning. It has its use also in enabling the student to gauge the quality of bricks for certain specific purposes. We shall make no apology for introducing a few observations on metallurgy. Neither a chemical analysis, nor a mineralogical examination can be estimated at its true worth unless the student is aware of the changes which take place in the substance on the application of heat. Some have insisted that the brick manufacturer should possess an intimate knowledge of physics. We do not go so far as that, but we do say that the more he knows of the behaviour of confined heat the better. The burning of bricks is, in a sense, a physical process, but a competent acquaintance with the rudiments of metallurgy suffices to explain all that, and a great deal more.

In reference to terra-cotta, the preparation of the raw materials is half the battle. The processes adopted in manufacture are, of course, of a much more refined nature than with bricks. Yet on a broad basis there is a great deal in common in the method of treatment of the two. The terra-cotta manufacturer is obliged to take more trouble in dealing with his commodity. It is very difficult to treat of terra-cotta from a scientific standpoint, in which respect it differs very markedly from bricks. In many instances it is only a species of veneer, and serves to hide a mass of concrete made anyhow. Its quality, from a structural point of view, is only that of the concrete within, except that it, to a certain extent, protects the latter from atmospheric influences. In so far as it may do this it is useful, but under the circumstances it is almost impossible not to recognise that it is a deceitful product. A brick does not pretend to be more than it is; terra-cotta, on the other hand, often apes a superior material. Nevertheless, we must take terra-cotta as it is, and we shall minutely describe the raw materials used in its manufacture, their preparation, moulding, and final burning. The mode of weathering of this substance, together with the peculiar effects of temperature thereon, will also be considered.

The machinery used in making bricks, &c., calls for very little description in these articles, and will only be dealt with in connexion with the rudiments of the subject. It is desirable to do this for the student to comprehend the differences between a hand-made, wire-cut, or pressed brick. In other words, machinery will only be dealt with in so far as it may materially influence the quality of the finished product.

We may say that we do not mean to deal with earthenware goods, and so forth, but shall treat of "bricks" in the most limited acceptation of the term, and as purely structural materials. "Terra-cotta" will also be restricted to its use as a structural material only. We shall have nothing to say on the present occasion as to its artistic merits, or otherwise; our programme is already full enough.

Finally, nothing herein contained will be of the slightest interest to the makers or users of bricks employed in "jerry" building; we cannot undertake to go into details concerning the strength, mineral structure, classification, porosity, or chemical composition of materials mostly made of the *olla podrida* of town refuse heaps.

OBITUARY.

MR. HAROLD SWAINSON.—We greatly regret to learn the premature death of Mr. Harold Swainson, collaborator with Mr. Lethaby in an important book on "St. Sophia," which we only received two or three weeks ago, and which is still awaiting adequate notice in our columns. Mr. Swainson was only twenty-six. He had just gone to Egypt full of life and hope in hard work, and a sudden illness has ended his life. A friend describes him as one who, with great natural ability and quick insight, together with the simplest honesty of purpose and the advantages of a university training, seemed singularly fitted to help forward the art of modern building to better issues. His letters show that his great delight in his travel was to observe how the Copts and Arabs still met structural requirements in a traditional manner, "both natural and national." Everyone who has seen the book on St. Sophia, which was to a great extent his work, will recognise that in him modern architectural study has sustained a serious loss.

GENERAL BUILDING NEWS.

THE BUILDING TRADE IN MANCHESTER.—Perhaps there has been no trade more actively pursued in Manchester during the past year than the building trade. Throughout the city, structural alterations, additions, and renewals have been and are in progress, while in the suburbs a very large amount of work is being carried on in erecting villa and cottage property. Many hundreds of cottages, at rents varying from 5s. to 8s. weekly, are in progress, and houses of this class are rarely untenanted. Ruabon and some other special bricks have risen in price owing to the unusual demand, and so have some grades of stone. Timber, which is now more cheaply conveyed by means of the Ship Canal, has fallen. There is a growing tendency in the case of city property to employ girders instead of beams, as the saving in internal space is considerable. There is every promise of continued activity during 1895.

RESTORATION OF BRISTOL CATHEDRAL.—A meeting of the executive committee for the restoration of Bristol Cathedral was held on the 17th ult. in the Deanery. The sanction of the committee was given to raise the sum of 1,500*l.* as an initial outlay, for laying down the foundations and framework of a new organ, the plan being to utilise all that was good in the present organ, and to make additions from time to time, as money came in. The question of lighting the choir then came under consideration. The architect having expressed his strong preference for lighting by pendants, rather than by standards or any other means, his proposal was agreed to, and it was left to the Chapter to decide whether gas or electricity should be employed. The question of heating the choir was postponed for the present. The report of the clerk of works showed that three bays of the cloisters were approaching completion, and that the fourth would shortly be taken in hand; also that the refixing of the old oak stalls, and the laying of the marble pavement in the choir, were making satisfactory progress. Mr. Pearson's designs for a choir screen, reredos, sedilia, and side screens were then brought under notice. The estimates were as follows:—Choir screen, with gates, complete, 1,350*l.*; reredos (including sculpture valued at 562*l.*), 2,403*l.*; sedilia, &c., on north and south sides, wherein are re-used and incorporated portions of the old organ screen, 770*l.*; five wrought-iron side screens, 550*l.*

LEEDS BUILDING TRADES.—During the past twelve months the building trade in Leeds has not been of a particularly bright character. There have been no disputes of moment, but the undertakings which served as a redeeming feature of the back end of 1893 have been completed, and there have been comparatively none to take their place to give an improved tone to the year 1894. The work at the Post Office has been continued. It was expected at the close of last year that there would be a number of public improvements that would find work for the builders, but of these, the North-Eastern railway extensions, is the only one that has become a serious work. Building on a small scale has gone on in different parts of the city, especially in the Roundhay-road and Burley districts, but the employers of labour have had difficulty in finding work for all their regular hands, in spite of the favourable weather for outdoor work. The steps taken by the Corporation for the widening of a number of thoroughfares have had some effect upon trade. The fire-clay industry in Leeds in its several branches has been fairly well maintained. There has been an increasing demand for glazed-bricks, while for other articles of sanitary ware there has been a steady trade.

BAINBRIDGE SHELTER, SHEFFIELD.—The building erected by Mr. Emerson Bainbridge at the corner of Norfolk-street and Surrey-street, Sheffield, for the benefit of unfortunate waifs and strays, was opened on the 28th ult. by the Duchess of Portland. The buildings have been erected from the designs of Mr. J. D. Webster. The ground-floor is occupied by shops. The first-floor, approached by a door in Norfolk-street, is set apart for the purposes of the shelter. The second floor is set apart for the purposes of the local branch of the Society for the Prevention of Cruelty to Children.

SHEFFIELD BUILDING TRADE.—The building trade of Sheffield has, during the past twelve months, been fairly active and prosperous. The main operations have been confined to house building, which has been carried on more extensively than in 1893, and chiefly in that portion of Sheffield which lies between Sharrow Vale and Abbeydale, where almost a new town has sprung up. The actual statistics of plans sanctioned by the authorities show that for dwelling-houses in the 12 months, 1,300 plans were passed, and about 350 plans for other buildings of various kinds. With the new Town Hall rapid progress has been made within the past few months. During the past twelve months the elevations facing Surrey and Norfolk-streets have been completed and roofed in, so that the City Surveyor's department may be able to remove as early as possible from their present offices in Bower Spring. The Council Chamber, and the ante-rooms connected, have also been roofed, the stone-work completed, and the general interior work very far advanced. The principal staircase, leading to the Council Chamber and the Mayor's reception-rooms, has been finished so far as regards the exterior work, and the oak lantern-light has been hung. A start has been made on the carved panels and spandrels, and the polished marble lining which is to embellish the lower portion of the staircase is being prepared. Steady work has been done on the elevation in Pinstone-street, which includes reception-rooms and the corridors leading to the same. The roof-timbers are partly in position, and with the exception of the gables, the stone-work is virtually finished. The tower which is to ornament the structure is just now emerging over the adjacent roofs. The greater portion of the carving and figures are already completed, and have been exhibited by Mr. Pomeroy, the sculptor. While the number of men employed by the contractor has seldom been less than 200, it is a fortunate circumstance that until near the close of the year no accident of a fatal character occurred, nor has any other serious accident happened during the construction of the building.

STABLES, KILMARNOCK, AYRSHIRE.—The new Corporation stables in Titchfield-street, Kilmarnock, were opened on the 31st ult. The site embraces the ground behind Calcutta Lodge, extending to about 100 ft. by 160 ft., and the buildings are erected on three sides, leaving a courtyard in the centre. The plans were prepared by Mr. R. S. Ingram, and the principal contractor was Mr. James Wallace.

SCHOOLS, GREAT BENTLEY, ESSEX.—The Great Bentley School Board have appointed Mr. J. W. Start, F.S.I., of Colchester and Harwich, as their architect, for the new schools to accommodate 250 children, with the necessary offices, playgrounds, &c., about to be erected near the railway station.

BUILDING, STONE, AND TIMBER TRADES OF BRADFORD.—Comparatvely little building has been

done in Bradford during the past year. With the exception of the Prudential Assurance Company's new offices and the Midland Railway Company's Goods Offices, no business premises of any note have been erected during the year. Extensions, however, have been made to the Usher-street and Belle Vue Board Schools, and a large Board school is in progress at Frizinghall. Labour has been plentiful during the year, and labourers' wages have been advanced ½d. an hour. The stone trade has only been moderate throughout the year, greater dulness perhaps prevailing during the closing months. Prices of stone rule about the same as last year. The timber trade has not experienced any remarkable change during the year. Trade has not been brisk in any department.

BUILDING IN EDINBURGH AND LEITH IN 1894.—During the past year building operations in Edinburgh have exceeded in number those of the previous year or two. Perhaps the outstanding features of the work done have been the completion of big undertakings on the one hand, and the amount of tenement building on the other. The building trade at Leith during the past year has been well maintained. Several important erections have been completed, and others are at present in course of construction

BUILDINGS OF THE SUN INSURANCE OFFICE, GLASGOW.—New buildings have been erected in Renfield-street and West George-street, Glasgow, for the Sun Fire and Life Insurance Office. The buildings were designed by Mr. Wm. Leiper, architect, Glasgow. The frontages to both streets bear a considerable amount of sculpture, executed by Mr. William Rhind, Edinburgh. The capitals of the street floor are emblematical of the signs of the Zodiac, and surmounting the pediment in Renfield-street is a figure of Apollo and another of Day and Night. The treatment of the upper stories follows that of the Chateaux of France, with enriched dormers. The main entrance is in the angle, and forms the basement of a large octagon, which is crowned by a domical roof and lantern. At the base of the dome the circular pediment is filled in with sculpture representing Aurora. Above the doorway are sculptured panels of winged figures holding the shields of England, Scotland, and Ireland. The whole building is of red freestone, with a base of red Corrennie granite, and the roofs are covered with green Elter Water slates. Altogether, the building consists of six floors and a basement. An installation of electric light has been fitted up, the current being supplied by the Corporation, and an electric hoist gives access to the upper floors.

SANITARY AND ENGINEERING NEWS.

SEWERAGE WORKS, RHYL.—On the 14th ult. memorial stones were laid at Rhyl of the new sewerage works and marine lake, which are now in course of construction at a cost of 50,000*l*. The sewage will be conveyed by gravitation to a large reservoir, and lifted by machinery to a high level reservoir and discharged into the sea at a long distance from the shore, the old tide-lock system being entirely dispensed with. The marine lake will cover forty acres, have an island in the middle, and a drive right round. Mr. Baldwin Latham is the engineer.

SEWERAGE AND STREET-WORKS, HENDON.—Colonel Coke, C.E., one of the inspectors of the Local Government Board, held an inquiry at the office of the Board, Hendon, on the 21st ult., with reference to an application of the Local Board for permission to borrow a further sum of 5,307*l*. for works of sewerage, and 3,353*l*. for private (street) works and improvements. Mr. S. S. Grimley, engineer to the Board, explained the various plans and there was no opposition. The inspector subsequently visited the several localities accompanied by the engineer, including the outfall works, where the sewage is treated by the International Water and Sewage Purification Company, also the pumping main sewer in course of construction, and promised to report as soon as possible.

WATER SUPPLY, LYNN.—The Lynn Town Council having purchased seven acres of arable land in the parish of Gayton, for the purpose of their new water supply, the contract for sinking two trial wells through the chalk has been entrusted to Mr. W. S. Freeman, of Otford, Kent. The site is 1,000 yds. from Well Hall Farm, and 500 from Gayton Union Workhouse. The wells are to be 14 ft. apart (centre to centre), each 7 ft. in diameter, and about 100 ft. deep, with drifts or galleries (running parallel north and south) of considerable size, cut into the chalk until what is considered a sufficient supply of water is met with, and the excavating operations are expected to be completed in three months. The water is to be tested by a Local Government Inspector, and upon his decision rests the ultimate issue whether or not the scheme of the Borough Engineer, Mr. E. J. Silcock, shall be further proceeded with. Already 15-in. pipes have been laid by Mr. H. Collison, of Lynn, from the river, part of the way up the lane next the field in question; they are to be continued to the wells, a total distance of 1,030 yds., and will be used for clearing off the water pumped therefrom, and are intended for a portion of the permanent scheme.

MISCELLANEOUS.

INFORMATION FOR EMIGRANTS.—The January circulars of the Emigrants' Information Office show the present prospects of emigration. A summary of Consular reports from the United States and other parts of North and South America is also issued for the fourth year. In New South Wales there is no demand for more labour, except for domestic servants; some of the coal-mines have been closed owing to the depression, and wages have been reduced in the printing and other trades; the railways, however, have been doing well. In Victoria the metal, building, and other trades are amply supplied with labour; the furniture trade continues very depressed. South Australia and Tasmania are fully supplied with all kinds of labour. The prospects in the building trades at Brisbane are better than they were, but there is no opening for more hands. Work in New Zealand has with the return of spring become much more plentiful, and there is a large decrease in the number of men travelling on the road; with the exception of Western Australia, it is the only colony which offers a fair opening to mechanics and other skilled workmen at the present time. The system of opening up the Crown lands in New Zealand, and letting them in areas of from 50 to 100 acres to working men, the Government paying for felling the bush and adding the cost to the price of the land, has been a marked success. Nominated passages to Cape Colony have just been withdrawn from mechanics and artisans; men are warned against emigrating to the Cape, unless they have secured employment beforehand. In Natal there has been a fair demand for a few bricklayers and plasterers at Durban, but otherwise the colony seems well supplied with mechanics. Emigrants to that colony should remember that the ordinary trades, such as those of brickmakers, navvies, &c., are to some extent in the hands of Indian coolies or of coloured natives working for low wages.

THE SANITARY INSTITUTE.—At an examination for Inspectors of Nuisances, held at Liverpool on the 21st and 22nd ult., sixty-seven candidates presented themselves. Questions were set to be answered in writing on the 21st, and the candidates were examined *vivâ voce* on the 22nd. The following thirty candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of sanitary inspectors:—Thomas Catterall, Blackburn; Helen Georgie Coachafer, King's Heath Vicarage, near Birmingham; Robert Collins, Walton, Liverpool; Thomas Collister, Hightown, Manchester; Joseph Henry Cowden, Walton, Liverpool; Ethel Deane, Sefton Park, Liverpool; Philip James Ducker, Chester; James Eastwood, Mytholmroyd; Thomas Armistead Foxcroft, Settle, Yorkshire; John Singleton Green, Haslingden; Richard Harrison, Liverpool; Dudley Hickman, Altrincham, Cheshire; James Hulse, Tyldesley; Mildred M. Jones, Birkenhead; Francis Lancaster, Barnoldswick; Alexander Love, Tranmere, Birkenhead; Robert Lowe, St. Helens; Eugene Albanus Lowe, Liverpool; William Lyon, Walton, Liverpool; Richard Price Morgan, Towyn, North Wales; Edwin James Pamphilon, Hulme, Manchester; John William Parker, Burslem; Henry S. Phillips, Ennis, Co. Clare; Thomas Sanderson, Blackpool; William Speddy, Penrith; Joseph Robson Sykes, Thornaby-on-Tees; David Walker, Liverpool; Thomas Henry Whilde, Ramsbottom; John Wilson, Manningham, Bradford; John Younger, Birkenhead.

THE PLUMBERS' COMPANY.—The Lord Mayor on Saturday last distributed the medals, silver and bronze, and certificates, first and second class, to the students who have most distinguished themselves during the recent examination connected with the classes of the Plumbers' Company, the Master of the Company, Sir Stuart Knill, presiding. At the meeting, which took place at Guildhall, the following ten operative plumbers, who had passed in honours the last City and Guilds Technical Examination, were presented by Sir Stuart Knill with the freedom of the Company to mark the appreciation of the honour done to the craft by the honourable position they had attained in the examination lists. The successful students were Timothy Bradshaw, Pendlebury (Lancs.); Thomas Croft, Stalybridge; Michael Fennell, Dublin; William Firth, London; J. W. Holbrook, Bristol; Mark Kershaw, Manchester; Ch. Hy. Quelch, London; Hy. Bowden Serridge, Plymouth; Arthur W. Walter, London, and Jno. Webster, Glasgow. The medals, from a design by Mr. W. D. Caröe, executed by A. Wyon, first struck for the National Workmen's Exhibition, were presented — the silver medal to J. Parrett, W. T. Sheppard, and A. W. Walter, all of London: the bronze medal to R. Sanderson, Preston; H. Beeson, London; J. J. G. Turner, London; and three youths belonging to Leeds, Messrs. Whitwell, Sanderson, and Lewis. The following received certificates—C. Jeffrey, W. C. Greenland, and S. R. Roberts, London; and E. Bedford, F. Roylance, J. Crossland, E. Helmsley, and J. Wooler, Leeds. In the course of the proceedings, Professor Garnett in a brief address said, the Plumbers' Company had been at great pains to provide workshop teaching in their classes in order to ensure that the teaching should have the most practicable character attainable. It was a strict condition that all students should be members of the trade, and the public had thus the best guarantees of the practical value of the technical education given by the Company. The syllabus had been much criticised. By some it was considered too theoretical and insufficiently practical, but he thought any practical shortcomings that might have existed would be generally found due not to the too theoretical character of the syllabus, but to some want on the part of certain teachers, of such a complete mastery of the subject as would enable them to reduce their theoretic and scientific knowledge to those practical lines, which were an absolute necessity in all technical teaching of this kind.

PUBLIC IMPROVEMENTS IN SHEFFIELD.—Mr. C. F. Wike, the City Surveyor of Sheffield, has forwarded us some facts and figures in relation to the Sheffield High-street improvements and other works. The High-street improvement will cost over a quarter of a million of money, and it is already progressing with some rapidity. The whole of the freeholds have been purchased or arranged for; but there are still several leases to be acquired. About a year ago the great fire at Messrs. Hovey's gave the Corporation an opportunity of securing the widening of Castle-street and Angel-street. Since that occurrence, a building-line has been arranged with the property-owners, which gives a 50-ft. street. Three properties have already been secured. Negotiations are still pending in regard to Cockayne's frontage. The improvement will give a 50-ft. width right up to King-street, and the cost is estimated at over 50,000*l*. These are two of the largest schemes the Corporation have been engaged in during the year; but there are some fifty or sixty smaller improvements in different parts of the city, which irregular building in former years and faulty street-lines have rendered necessary. The most notable of these smaller improvements is that at Eyre-street, which gives a long-desired through-street in what was formerly a puzzling and perplexing way. Considerable progress has also been made in regard to the widening of Westbar, and it will not be long before the full width of 60 ft. will be secured for its full length. The work of street dedication has been proceeding rapidly during the past year. The necessary plans and notices have been prepared and issued for about three miles of this street work. About five miles of streets have been reconstructed in different parts of the city. Fargate, Division-street, West-street, Westbar, and other thoroughfares to the extent of 21½ miles have been paved with wood, granite, or gritstone, or re-macadamised, and about 6½ miles of footpaths have been relaid. During the year nearly seven miles of new sewers have been constructed in different parts of the city at a cost of over 25,000*l*. This includes about three-quarters of a mile of main sewers at Walkley, and about 2½ miles along Abbeydale-road. The water-carriage scheme has also necessitated the construction of another three-quarters of a mile of sewers on highways which have been taken over by the Corporation. At the Sewage Works at Blackburn Meadows the great difficulty which existed in getting rid of the vast accumulation of sludge has at last been overcome. The Corporation have secured a number of railway waggons for this purpose, and during the last twelve months have removed over 50 000 tons.

LONDON WATER SUPPLY.—In the recently-issued report of the Water Examiner for London, it is stated that during the course of last month 182 samples were tested, of which sixteen were recorded as being "clear but dull," and only one as "slightly turbid." The floods last month in the Thames Valley have been the most severe since the year 1821. During November the average rainfall at Oxford is estimated at 2·31 in., but last month the actual rain amounted to no less than 4·8 in., being an excess of 2·49 in. There was one striking peculiarity connected with last month's rainfall. In most exceptionally wet seasons the fall of rain is more or less evenly distributed over the month. Last month there were seventeen days on which no rain fell and eight other days on each of which less than two-tenths fell. On the remaining five days — the 7th, 11th, 12th, 13th, and 14th—no less than 4·02 in. fell, and since the 14th the fall has not exceeded 0·17 in. The sudden downpour of 4 in. of rain in five days, amounting to over sixty-nine million gallons per square mile, largely overtaxed the capacity of the river to carry it off, whereas had this amount been more evenly distributed over two or three weeks no harm would have been done. Bacteriological examinations of the waters were conducted unremittingly during the month, for it was important to ascertain how the filter-beds were working under the unprecedented strain to which they were subjected. Samples taken from the filter-beds and also from the mains showed, on examination, that the water, as sent out for consumption, was, from a bacteriological point of view, a pure article. In several instances the colour was higher than usual, but the entire absence of ammonia and the high ratio between organic carbon and nitrogen proved that the colouring matter was entirely of vegetable or peaty origin.

MATHESON & GRANT'S ENGINEERING TRADES' REPORT.—Messrs. Matheson & Grant, in their usual half-yearly report, state that for the last half-year there has been an almost dead level of low prices and monotonous depression, for the bottom was reached some months ago, and hardly any

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
School Buildings, Cardigan	Intermediate School Managers	Not stated.....	No date
Workhouse and Infirmary	Ipswich Union	100*l.*; 50*l.*	Mar. 25
Sewage-disposal Works	Durham U.S.A.	100*l.*; 50*l.*	do.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Supply of Granite.....	Beckenham Local Bd.	J. A. Angell.....	Jan. 7
Earthenware Sewer (563 ft.), Park-lane ..	Kidderminster T. C...	Arthur Comber	Jan. 8
Levelling, Paving, Cross-street, &c.	Llandaff and Dynas Powis R. District Council	W. Fraser	do.
Pipe Sewers, Park-street, &c.	Aberdeen Twn Council	Wm. Dyack	do.
Forty Houses, Penrhiwceiber, Mountain Ash, Glam.	.....	S. Rooney	do.
Additions to School, West Stanley, Durham	Tanfield School Board	J. W. Rounthwaite ..	do.
Building Work at Workhouse, West Malling, Kent	Malling Union.....	*Official*	do.
Pipe Sewer (1,300 ft.), Park View-road, Eltham	Lee Board of Works ..	do.	Jan. 9
Schools, Victoria-park, Bedminster	Bristol School Board.,	E. W. Barnes	Jan. 10
Alterations, &c. Elmwood House, Upper Batley, Yorks	.....	Holtom & Fox.....	Jan. 11
*Waterworks	Skibbereen Union, co. Cork	R. W. Walsh	Jan. 12
Alterations, &c. to Steam Packet Tavern, George-street, Goole	.....	W. B. Andrews	Jan. 14
Twelve Pairs Semi-detached Villas, Feltham	.....	R. F. Anderson	do.
*Repairing and Painting Fences, Chelsea Embankment	LondonCountyCouncil	*Official*	do.
*Kerbing, Tarpaving, &c. Works	Lewisham Bd. of Wks	do.	Jan. 15
*Making-up Roads	Acton Urban District Council	D. J. Ebbetts	do.
Setts, Kerbs, Channels, &c.	Lancaster Corp.	Jno. Cook	Jan. 16

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
Reservoir and Waterpipes, Preston, near Linlithgow, N.B.	.....	Jas. Strang	Jan. 16
*Laundry at Workhouse	Islington Vestry.....	W. Smith	Jan. 17
Warehouse, Clifton-street, Manninghan-lane, Bradford	.....	Empsall & Clarkson ..	do.
Covered Reservoir and six miles Cast-iron Pipes, Kegworth, Leicester	Shardlow Union.....	G. Hodson.....	Jan. 19
*Additions, &c. to School Buildings.....	Colnbrook and Horton School Managers	*Official*	Jan. 20
*Works and Materials	Wandsworth Board of Works	.....	Jan. 22
*Fire Escape Staircases at Workhouse	Sevenoaks Board of Guardians	T. Potter	Jan. 29
*Extension of Leen Valley Railway.....	G. N. R. Co.....	R. Johnson	Jan. 24
*Construction of Sewer.....	Com. of Sewers City of London	*Official*	Jan. 25
*Police Barracks, Watford	Hertford C. C.	U. A. Smith.....	do.
Tramroad, Conduit Main, Reservoir, &c. near Maerdy	Pontypridd Waterworks Co.	Togarmah Rees	Jan. 30
Storage Reservoir, &c.....	Paignton (Devon) Loc. Board	J. Newton & Son.....	Jan. 31
*Police Offices, Cells, Court, &c	Rotherham Corp.	R. J. Lovell	Feb. 4
Additions, &c. to House, Fforchdwm, Glamorgan.....	Powley, Thomas, & Co.	John C. Jones	No date
Two Shops and Premises, Bull Ring, Kidderminster	W. P. Horden	J M. Gething	do.
*Shops and Houses, South London	.....	E. Tompkins	do.
Baptist Chapel, Heaton, near Bradford, Yorks.	.....	Jno. Jackson	do.
Roadmaking, Sewering, &c. Llanbradach Estate, Rhymney Valley, Cardiff.....	.....	Rickards & Blosse	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Literary and Art Director.....	Preston Corporation (Library Committee)	.....	Jan. 16
Clerk of Works	Bristol Corp.	2*l.* per week	Jan. 18

Those marked with an asterisk (*) are advertised in this Number. *Contracts, pp.* iv., vi., viii., x. *and* xxviii. *Public Appointments, p.* xxvi.

alteration has occurred since the summer. The demands upon manufacturers have been mainly for the working and maintenance of existing undertakings, but the mere wear and tear of the world's machinery does not afford enough employment for the hugh manufacturing capacity available. There is, at present, a truce between employers and workmen; but it can hardly be doubted that the reluctance of capitalists to embark in new undertakings is partly due to a fear of renewed agitation directly trade revives. Already the higher wages and shorter working hours in Great Britain, as compared with those of Continental rivals, have diminished the export trade of this country, though, in other ways, they may have been beneficial to the community. Coal.—The main questions in dispute between the masters and men, which led to the English strikes of 1893, were settled in July last, but the miners' strike in Scotland which followed, collapsed only in October, having for four months wrought immense harm, not only to masters and men, but to railways and manufacturers in the Northern and Midland counties. Although no alteration in wages can take place till 1896, a lessened demand for coal has caused prices to fall considerably. Large stocks of coal are held at the collieries; contracts for the year now commencing have been made at reduced rates; and as no relief from lower wages is obtainable, many of the smaller, or badly-equipped, collieries will have to cease from working. The metallurgical and engineering trades, however, are benefiting by the lower prices. The prices of pig-iron and finished iron have remained—with only trifling fluctuations—at one low level for the last six months, and there are no clear signs of recovery. Steel is even cheaper than in July; the rail-mills are not half-employed, and shipbuilders' steel has been sold during the last few weeks at lower prices than ever reached before. In the United States there is a similar condition of affairs; steel rails at Pittsburgh are only 1*l.* per ton above English prices, and the trade is tending to crystallise into the hands of the few capitalists who have the most powerful resources. But there is an immense mileage of new railroads projected, and extended equipment of existing roads required, which will certainly improve the prices of steel as soon as the present financial troubles are adjusted. The best chances in this country, and to some extent also in America, seem to lie in the growing activity of the shipbuilding industry. Mechanical Engineers.—Ironfounders, machine-tool makers, and the miscellaneous trades which may be classed under this heading, have for the most part shared in the general depression of the past year, and even those makers who have been fairly busy have had to reduce prices. There has been a continued demand for electric-lighting plant, not only at home, but also for export, and much good work is done by those who, having had experience as makers of steam-engines, have added the manufacture of special electric appliances. The increase in the number of large installations for town supply encourages a demand for the highest class of steam-gines and boiler equipment. There has been a considerable export of plant and machinery for mines, the rapid development of gold-mining in the Transvaal having especially stimulated this branch of trade. The standard of quality is now a high one, and it is more than ever recognised that, considering the expenses of carriage, the high cost of skilled labour in South Africa, and the heavy loss resulting from breakdowns, it is folly to import thither anything, whether materials or machinery, but the best of its kind. Portland Cement.—The slight revival which took place about Easter did not continue through the summer; the demand from abroad has again diminished, and no improvement is expected till the spring. Prices remain very low, and afford a good opportunity to those who are in a position to make contracts. A question has arisen in regard to the admixture by some makers—who claim it as an improvement—of small quantities of other material in a raw state with the calcined chalk and clay, of which English Portland cement is made, and which admixture is alleged to be adulteration by those who adhere to the usual method. Independent scientific inquiry is being made into this matter, which is of great importance to engineers, as well as to the manufacturers, especially in view of the keen competition of German-made cement.—Public works at home are not extensive, and the Private Bills deposited for the coming session of Parliament are fewer than those last year, which were less in number than the previous year. The contracts for the M. S. & L. Railway Extension to London have been let at prices unprecedentedly low, and the work has already commenced; the East and West Coast Line in Derbyshire is being pushed forward Eastwards, but the West portion seems to have been abandoned; it is again attempted to invade the monopoly of the N.-E. Railway by independent lines, much needed from Lancashire, through Yorkshire to Newcastle; the new line from Croydon to Redhill, to increase the accommodation of the L. B. & S. C. and the S.-E. Railways, is to proceed, and the widening of the Midland Railway from Bedford to London will be finished this year by the completion of the two tunnels on that section. There is also a good deal of railway work at present going on in Scotland, in connexion with the City lines in Glasgow, as well as in the North. But the large class of civil engineers who have found past employment in the construction of British Railways and other public works, according to the strict rules of the Board of Trade and Parliamentary procedure, find most of their occupation gone, and have to seek a wider field where there is more scope for original design and cheaper methods. Abroad, the crying need for railways in India must soon compel attention.

THE WESTERN JOINERY COMPANY.—We are asked to state that the business of a steam joinery and box manufactory, recently carried on at Cardiff under the firm of Davies Bros., has been acquired and will in future be carried on by "The Western Joinery Company, Limited," at the same address.

PARTNERSHIP DISSOLVED.—Messrs. Kempson & Fowler, who have hitherto carried on architectural practice together at Llandaff, dissolved partnership on December 31. Mr. Fowler will carry on the business of architect and surveyor at Old Bank Chambers, Cardiff.

CAPITAL AND LABOUR.

THE LONDON BUILDING TRADE. — In consequence of difficulties which have arisen from time to time by the objections which have been made by men who are members of trade unions to working with men outside these organisations, a meeting of firms engaged in the London building trade was held at 31, Bedford-street, Strand, on the 2nd inst., under the auspices of the Central Association of Master Builders. There was a large and representative attendance. In the course of the discussion which took place it was pointed out that many strikes have occurred throughout the building trade of London since the last agreement between masters and men in 1892; that these strikes are of almost daily occurrence now, and that the almost sole reason for this is caused by the union men refusing to work with non-union men. It was therefore now resolved that a notice in the following terms should be posted on all works and jobs:—"It is a condition of employment at these works that, in accordance with the understanding of 1892, no workman shall be placed under any disabilty by reason of either belonging or not belonging to a trade society."

MEETINGS.

FRIDAY, JANUARY 4, 1895.

Architectural Association.—Mr. C. G. Harper on "Architectural Illustration." 7.30 p.m.

SATURDAY, JANUARY 5.

London and Provincial Builders' Foremen's Association.—Monthly Meeting to be held at the Memorial Hall.

MONDAY, JANUARY 7.

Royal Institute of British Architects.—Business Meeting (1) to receive the deed of award of the prizes and studentships for 1894-95; (2) Exhibition of Drawings of the Pantheon at Rome by M. Chedanne; (3) Exhibition of Drawings by the late Mr. Gribble. 8 p.m.

Surveyors' Institution.—Adjourned discussion on Mr. William Sturge's paper on "The Burdens on Real Property and Land," and on the Paper read by Mr. A. Dudley Clarke at the Meeting of November 26, entitled "The Incidence of Taxation on Land." 8 p.m.

Architectural Association Camera Club.—Mr. C. R. Ashbee, M.A., on "The Work of the East-End Watch Committee." 8 p.m.

Royal Academy of Arts.—(Lectures on Painting), Mr. J. E. Hodgson, R.A., on "Development of Italian Art from the Fifteenth Century to the Death of Raphael." I. 8 p.m.

Victoria Institute.—Professor Lobley on "Physical Geology of the Globe." 4.30 p.m.

TUESDAY, JANUARY 8.

Institution of Civil Engineers.—(1) Mr. Sigvard J. Berg on "The St. Gothard Mountain-Railway and the Stanzerhorn Cable Railway;" (2) Mr. Alfred Collett on "The Monistrol-Montserrat Rack-Railway;" (3) Mr. C. A. W. Pownall on "The Usui Mountain-Railway, Japan." 8 p.m.

Society of Biblical Archæology.—Anniversary Meeting. 8 p.m.

Glasgow Architectural Association.—Mr. W. J. Blaine on "Monumental Buildings." 8 p.m.

WEDNESDAY, JANUARY 9.

Carlisle Architectural, Engineering, and Surveying Association.—Mr. H. Higginson on "Building Construction."

Liverpool Engineering Society.—Mr. John A. Brodie on "Tramway Traction." 8 p.m.

Edinburgh Architectural Association.—Rev. Robert Scott Mylne on "The Architecture of Bologna and North-Eastern Italy." 8 p.m.

THURSDAY, JANUARY 10.

Royal Academy of Arts (Lectures on Painting).—Mr. J. E. Hodgson, R.A., on the "Development of Italian Art from the Fifteenth Century to the Death of Raphael." II. 8 p.m.

Institution of Electrical Engineers.—Inaugural Address of the President, Mr. R. E. Crompton. 8 p.m.

Society of Antiquaries.—8.30 p.m.

FRIDAY, JANUARY 11.

Institution of Civil Engineers (Students' Meeting).—(1) Mr. Edward E. Matheson on "The Ampthill Second Tunnel on the Midland Railway;" (2) The Hon. H. W. Holmes à Court on "Tunnelling: with special reference to Ampthill and Elstree Second Tunnels on the Midland Railway." 8 p.m.

Institution of Junior Engineers.—Mr. H. M. Rounthwaite on "Marine Engine Design of To-day." 8 p.m.

SATURDAY, JANUARY 12.

Sanitary Inspectors' Association (St. James's Hall).—Mr. S. G. Fairchild on "Details of Plumbers' Work." 7.30 p.m.

Queen's College, Cork.—Mr. Arthur Hill on the "History of Architecture." VI. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

465.—WINDOW-SASHES: *D. Aitken.*—According to this patent, the top and bottom sash are formed as two frames, one sliding up and down, the other an inner frame carrying the glass swivelled to the outer frame, so as to allow of the sash being turned inwards for the purposes of cleaning, &c.

1,283.—VENTILATOR: *C. Ellis.*—A tube or pipe of suitable thickness projects above the roof, and has an enlarged top in which are formed circular openings with short tubular projections covered by plates or shields fixed a little way off so that the outside current of air is deflected and causes a suction of air in the main tube of the ventilator.

1,404.—VENTILATING WINDOW-SASHES: *T. Holliday and others.*—The improvement which forms the subject of this patent consists in extending the window-sash and covering the extension with perforated material, and providing a recess above or beyond the ordinary window to receive this extension.

1,427.—PORTLAND CEMENT: *A. McAra.*—Instead of the ordinary methods of mixing, washing, and grinding, an admixture is made of argillaceous and silicous limestones ground into powder, and a wet slip or slurry of carbonate of lime, or shale.

3,449.—SASH-PULLEYS: *W. Johnson.*—Instead of the face-plate of the axle being made in one piece, as usual, it is made in two or more parts, in order that one part of the face-plate may readily be removed, and access can be had for cleaning or repairing the pulley, or replacing cords or chains.

18,664.—HEATING SYSTEMS: *A. G. Paul.*—An improved system consisting chiefly in combining a source of heat, a circulatory system including radiators and the necessary connexions, an intervening medium between the source of heat and the system of such a nature that it cannot be heated above a limited degree, and a positive air-exhauster connected to the system.

20,260.—SMOKE-CONSUMING FIREPLACES: *G. W. Kraft* (Dresden).—In this hopper-fed fireplace or furnace, the hopper is capable of adjustment so as to vary the area of the fireplace or grate, producing a larger or smaller fire at will, and an economy of fuel.

NEW APPLICATIONS FOR LETTERS PATENT.

DECEMBER 17.—24,465, G. Cooper, Water-supply Cocks, Fittings, or Seatings.—24,495, F. Jung, Brick Kilns.—24,503, W. Miller, Trap for Sinks.—24,504, W. Jaeger, Roofing Tile.—24,509, G. Martineau, Butt and other Hinges.

DECEMBER 18.—24,543, E. Bernard, Syphon Closets.—24,553, G. Scurfield, Slide Rules.—24,554, J. Davidson, Securing Door-knobs.—24,565, F. Burrell, Sash Fasteners.—24,581, G. Crosher, Interceptors or Sewer Traps.—24,584, V. Emerson, Dry Kilns.—24,623, M. Ungrich, Apartment Houses.—24,642, W. Waldron, Wall-paper Printing Machines.—24,643, H. & B. Jones, Rock Drills.—24,646, J. Gabriel, Cement.—24,648, H. Hoopmann, Roofing Tiles.

DECEMBER 19.—24,663, L. Marsden, Chimney Tops.—24,664, H. Francis, Appliances for Holding Windows and preventing Rattling.—24,688, T. Black, Window-sashes, to enable them to be opened inwards.—24,704. W. Moore, Flooring or Boxings for Hearths.—24,705, J. Hazlehurst and P. Jackson, Chimney Tops or Ventilating Terminals, &c.

DECEMBER 20.—24,745, F. Curley, Detachable Ornamental Fibrous Plaster Covers for Electric Light Ceiling Fittings.—24,750, J. Cartwright, Weather Shield or Draught-preventer for Doors.—24,757, J. Green and others, Ventilators.—24,775, F. Ballard and S. Lloyd, Chimney Cap.—24,789, S. Dalziel and J. Oliver, Alarms for use with Doors, Windows, &c.—24,820, J. Row, Window-sashes.

DECEMBER 21.—24,855, M. Adams, Flushing Apparatus, &c.—24,867 and 24,868, W. Morgan, Ventilation of Sewer Entrance-covers, and other Covers for Drainage or other works.—24,893, E. Shrimpton, Screws and Screwdrivers.—24,912, A. Boult, Cowls.—24,917, J. & W. Sherman, Flushing-cisterns.—24,925, C. Picking, Brick-making Machinery.

DECEMBER 22.—24,939, J. Carter and W. Torrington, Drain-tap.—24,940, J. Shaw, Repairing or re-Facing the Seatings of Water-taps.—24,945, H. Enoch, Flushing and other Cisterns.—24,946, G. Warren, Continuous Kilns or Ovens for Burning Brick, Lime, or Cement.—24,952, W. Tomlinson, Fastening Plates together, particularly applicable to Iron Buildings, Roofing, &c.—24,969, J. Johnson, Wood-working Machines.—24,987, W. Whiteley, jun., Self-closing Apparatus for Doors, Windows, &c.—24,994. J. Scheck, Building-stones and Bricks.—24,996, W. & E. Freeman, Securing Lead Pipes to Earthenware Traps, Nozzles, &c.—25,003, L. Charrier, Carving Wood Mouldings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

21,513, F. Stevenson, System of dealing with Smoke and Fumes Emitted from Chimneys.—22,056, G. Lear and J. Davidson, Concealed Chimney-top Smoke-cure.—22,074, J. Hodge, Water-waste-preventing Cisterns.—22,711, C. Russell, Pipe and Rod Fasteners for Lath and Plaster and Flimsey Wall and Ceilings.—22,774, J. Green and W. Oates, Joining Earthenware Pipes.—22,832, W. Tanner, Door-slides.—22,888, J. Wharfe, Locking Device for use with Sliding-bolts for Doors, &c.—22,898, G. Richardson, Mortice-locks for Doors, &c.—22,908, E. Chatelain, Water-closets, &c.—22,954, G. Hardie, Cleaning Drain-traps, &c.—23,126, F. Constable and F. P. Naldrett, Window-catch Fasteners.—23,202, P. Willis, Self-opening Doors.—23,211, W. Cruickshanks, Windows and Window-cases.—23,232, A. Classey, Clamps.—23,469, J. Tennant, Flushing Apparatus for Water-closets, &c.—23,723, W. Youlten, Casements.—23,790, L. Barwise, Preventing the Bursting of Lead or other Pipes or Tubes through Expansion or Pressure from within.—23,818, A. Malgarini, Improved System of Construction applicable to Buildings, Reservoirs, Canals, and other Structures.—23,836, A. Soar, Treads for Stairs, Floors, &c.—23,905, J. Stephenson, Bricks or Building Blocks, &c.—23,918, T. Potter, Fire-proof Floors and Ceilings.—23,056, J. Barnet, Adjustable Level or Inclined "Floor."—24,098, G. Church and G. Ettenger, Construction of Joints and Connexions for Metallic Tubular Structures, such as are used for the Under-frames of Girders, and Frames for Bridges and Buildings, and for Tubular Poles for Electrical Conductors for Masts, Railings, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

2,576, G. Legrand, Fire-grate.—3,802, R. Ames and L. Crosta, Jointing Drain and Sewer-pipes.—13,950, H. Swann, Locks and Fastenings and Stops for Window-sashes.—17,977, G. Barney and J. Clough, Door-knob Locks.—18,105, C. Reid, Safety-windows.—22,277, C. Cooze, Window-sashes, &c.—22,345, P. Willis, Ratchet-brace.—22,350, R. Lofthouse, Ventilators.—22,368, G. Czerwonky, Roofing-tile.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

DECEMBER 17.—By *Flood & Sons:* I.g.r. of 10*l.*, Clarendon-st., Harrow-rd., u.t. 58 yrs., g.r. 2*s.* 6d., 190*l.*; i.g.r. of 10*l.*, Woodchester-st., u.t. 58 yrs., g.r. 2*s.* 6d., 215*l.*; 278, High-rd., Kilburn, u.t. 93 yrs., g.r. 35*l.* 10*s.*, r. 120*l.*, 1,555*l.*

DECEMBER 18.—By *Ventom, Bull, & Cooper:* Two freehold cottages, High-st., Buntingford, Herts., 172*l.*; long leasehold cottage, Baldock-lane, 124*l.*; an enclosure of land, High-rd., 3r. 20p., f., 80*l.*—By *Holcombe & Betts:* No. 151, Maida Vale, u.t. 40 yrs., g.r. 10*l.* 10*s.*, 800*l.*; 25 and 27, Salisbury-st., Marylebone, u.t. 27 yrs., g.r. 12*l.*, r. 76*l.*, 385*l.*; 86, Salisbury-st., u.t. 27 yrs., no g.r., 220*l.*; 9, 11, 13, and 15, Aylesbury-st., Walworth, u.t. 19 yrs., g.r. 13*l.*, 440*l.*; 17, 19, and 21, York-rd., Hammersmith, u.t. 72 yrs., g.r. 9*l.* 9*s.*, r. 78*l.*, 480*l.*; 19, Andover-rd., u.t. 72 yrs., g.r. 3*l.* 3*s.*, r. 26*l.*, 175*l.*—By *Bean, Burnett & Eldridge:* 83, 85, 87, and 89, Church-st., Chelsea, u.t. 11½ yrs., g.r. 7*l.* 10*s.*, 650*l.*; 82, 86, 88, 90, and 92, Church-st., u.t. 11½ yrs., g.r. 16*l.*, 550*l.*; 80, Church-st., u.t. 12 yrs., no g.r., 140*l.*; 121 and 123, Harrison-st., Gray's Inn-rd., u.t. 34½ yrs., g.r. 5*l.* 10*s.*, r. 84*l.*, 555*l.*

DECEMBER 19.—By *Reynolds & Eason:* 11, Poole's-pk., Finsbury-pk., u.t. 71 yrs., g.r. 6*l.*, r. 28*l.*, 220*l.*; 15, Great Hermitage-st., Wapping, f., r. 50*l.*, 630*l.*—By *J. Hibbard & Sons:* Freehold builder's premises, Shaftesbury-rd., Upton-pk., 190*l.*; 4, Ashley-rd., f., 180*l.*; i.g.r. of 29*l.* 14*s.*, Laitwood-rd., Balham, u.t. 95 yrs., g.r. 4*l.*, 445*l.*; 67, Rupert-rd., Holloway, u.t. 68 yrs., g.r. 5*l.* 10*s.*, 155*l.*

DECEMBER 20.—By *J. A. Jones:* 23, Cornwall-st., Pimlico, u.t. 39 yrs., g.r. 9*l.*, r. 55*l.*, 480*l.*—By *Matthews & Matthews:* 15 to 18, Addington-sq., Camberwell, f., 1,155*l.*—By *Norman & Bowen:* 61 and 63, Tetley-st., Poplar, u.t. 47 yrs., g.r. 5*l.*, 275*l.*

DECEMBER 21.—By *D. J. Chattell:* 10 and 12, Old Woolwich-rd., Greenwich, f., r. 40*l.*, 210*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a., for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/ /0 — 0/0/0
Teak, E.I.	load	10/0/0 — 16/0/0
Sequoia, U.S.	ft. cu	1/10 — 2/2
Ash, Canada	load	3/0/0 — 4/5/0
Birch, do.		3/0/0 — 4/5/0
Elm, do.		3/15/0 — 5/0/0
Fir, Dantsic, &c.		1/10/0 — 3/0/0
Oak, do.		2/15/0 — 4/15/0
Canada		5/5/0 — 6/15/0
Pine, Canada red		2/15/0 — 3/5/0
Do. Yellow		3/10/0 — 5/15/0
Lath, Dantsic, fath		4/10/0 — 5/10/0
St. Petersburg		5/0/0 — 6/10/0
Wainscot, Riga, &c., log		2/15/0 — 5/0/0
Odessa, crown		2/15/0 — 5/0/0
Deals, Finland		
2nd & 1st std	100	7/0/0 — 9/0/0
Do. 4th & 3rd		7/0/0 — 8/0/0
Do. Riga		7/0/0 — 8/10/0
St. Petersburg, 1st yellow		9/10/0 — 12/0/0
Do. 2nd yellow		7/10/0 — 9/0/0
Do. white		8/0/0 — 10/10/0
Swedish		7/0/0 — 15/10/0
White Sea		6/10/0 — 14/0/0
Canada, Pine 1st		21/0/0 — 24/10/0
Do. do. 2nd		16/10/0 — 17/10/0
Do. do. 3rd, &c.		7/10/0 — 10/10/0
Do. Spruce, 1st		8/10/0 — 10/0/0
Do. do. 3rd and 2nd		6/10/0 — 7/10/0
New Brunswick		6/0/0 — 7/0/0
Battens, all kinds		5/0/0 — 21/0/0
Flooring boards, sq. 1 in. prep. 1st		0/9/6 — 0/14/0
Do. 2nd		0/7/0 — 0/11/6
Other qualities		0/5/0 — 0/7/0
Cedar, Cuba	ft.	/3 — /4
Honduras, &c.		/3 — /4½
Mahogany, Cuba		/3 — /6
St. Domingo, cargo av.		/3 — 1/6
Mexican do. do.		/3 — /4
Tobasco do. do.		/3 — /6
Honduras do.		/3½ — /5½
Box, Turkey	ton	4/0/0 — 13/0/0
Rose, Rio		7/0/0 — 28/0/0
Bahia		6/0/0 — 17/0/0
Satin, St. Domingo		0/0/5 — 0/1/0

TIMBER *(continued).*		
Satin, Porto Rico	c/o/6 — 0/1/6	
Walnut, Italian	c/0/3½ — 0/0/7	
METALS.		
Iron—Pig, in Scotland	ton	2/1/7½ — 0/c/0
Bar, Welsh, in London		5/12/6 — 5/15/0
Do. do. at works in Wales		5/2/6 — 5/5/0
Do. Staffordshire, in London		6/0/0 — 6/10/0
COPPER—British cake and ingot		43/5/0 — 43/15/0
Best selected		44/0/0 — 44/10/0
Sheets, strong		51/10/0 — 0/0/0
Chili bars		41/5/0 — 41/10/0
YELLOW METAL	lb	0/0/4½ — 0/0/4½
LEAD—Pig, Spanish	ton	9/11/3 — 0/0/0
English com. brands		9/12/6 — 9/13/9
Sheet, English, 6 lbs. per sq. ft. and upwards		10/15/0 — 11/0/0
Pipe		11/15/0 — 0/0/0
ZINC—English sheet	ton	18/10/0 — 19/0/0
Vieille Montagne		19/10/0 — 0/0/0
TIN—Straits		61/5/0 — 61/15/0
Australian		61/10/0 — 62/0/0
English Ingots		65/10/0 — 66/0/0
Banca		63/10/0 — 64/0/0
Billiton		62/10/0 — 63/0/0
OILS.		
Linseed	ton	19/17/6 — 20/5/0
Cocoanut, Cochin		26/10/0 — 0/0/0
Do. Ceylon		24/10/0 — 0/0/0
Palm, Lagos		25/0/0 — 0/0/0
Rapeseed, English pale		21/5/0 — 0/0/0
Do. brown		19/10/0 — 19/15/6
Cottonseed ref.		17/15/0 — 18/15/0
Oleine		21/10/0 — 24/ /0
Lubricating, U.S.		4/0/0 — 5/0/0
Do. refined		5/0/0 — 12/0/0
TAR—Stockholm	barrel	1/1/0 — 0/0/0
Archangel		0/13/0 — 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

ALDERSHOT.—Accepted for alterations and fittings to No. 11, Union-street, Aldershot, for Mr. Thomas J. Lipton:—
P. Kerridge, London £275

ALFORD (Aberdeenshire).—For the construction of office, &c., Alford Police-station, for the Standing Joint Committee. Mr. John D. Watson, County Engineer, Aberdeen:—

John Smith	£192 0	Wm. Wright	£188 15
Wm. Lauder	189 15	George Fowlie, Alford*	150 12

* Accepted.

BELVEDERE (Kent).—For the erection of new Congregational church and schools at Belvedere, Kent. Mr. Charles Pertwee, architect, Chelmsford:—

	Church.	Schools.
Fredk. Voller	£2,104	£1,087 0
E. Padget	1,764	893 0
Multon & Wallis	1,698	839 0
G. H. Gunning	1,690	688 0
Ernest West	1,688	835 0
Silas Parmenter	1,670	818 0
Somerford & Son	1,644	789 0
I. Otway	1,545	807 0
H. R. Tawney	1,495	649 10
Stickland & Chandler, Belvedere, Kent	1,425	850 0

BEVERLEY (Yorks.).—For additions, &c., to house for Deputy Chief Constable, for the East Riding Standing Joint Committee. Mr. Alfred Beaumont, County Surveyor, Beverley:—

G. Pape	£289 10 0	T. Johnson	£249 2 0
R. Pape	257 2 6	J. Constable	247 0 0
R. Potts	255 0 0	C. Stephenson*	228 0 0
E. Calvert	249 7 0	[All of Beverley.]	

* Accepted.

BIRMINGHAM.—For constructing a road at Harborne, in the city of Birmingham, for the Trustees of the Harborne Charity. Mr. James Pritchatt, surveyor, Birmingham:—

J. Mackay	£1,200 0	J. Biggs	£900 0
Geo. Trentham	937 11	J. Law	873 0
Currell & Lewis	930 0	Jones & Fitzmaurice*	870 0

* Accepted.

BOSCASTLE (Cornwall).—Accepted for additions, &c., to school buildings, for the U.D. School Board. Mr. Otho B. Peter, architect, Launceston:—
Messrs. Burnard & Gard, Boscastle, Cornwall £280

BOSTON (Lincolnshire).—For structural alterations to the National Schools, Boston. Mr. Jas. Rowell, architect, Boston:—

	For the Alterations.	Sundry repairs to existing work.	Total.
	£	£ s. d.	£ s. d.
H. W. Parker	430	16 10 0	446 10 0
H. Hinds	425	24 0 0	449 0 0
Hill & Son, *Carpenters' work, &c.* / Pinder & Son, *Bricklayers' work, &c.*	423	24 10 0	447 10 0
J. Lucas	420	23 15 0	443 15 0
J. Leafe*	420	18 10 0	438 10 0

* Accepted.
[All of Boston.]

BRISTOL.—For the erection of a Baptist school chapel, &c., Bishopston. Mr. Herbert J. Jones, architect, 12, Bridge-street, Bristol:—

W. Church	£2,682	J. Perrott	£2,305
Eastabrook & Sons	2,600	E. Walters	2,250
W. Cowlin & Son	2,563	G. H. Wilkins	2,230
J. E. Davis	2,478	R. Wilkins & Sons*	2,674
G. Humphreys	2,345		

* Accepted.
[All of Bristol.]

CHATHAM.—For mortuary and post-mortem room, for the Medway Board of Guardians. Mr. E. W. Betts, architect, Chatham:—

West Bros	£298 10	Robert Sampson	£256 0
Bathurst	296 5	J. L. Truman	249 0
Nye Bros.	292 0	E. W. Filley	246 0
Weymouth	279 10	Harris	240 0
H. E. Phillips	269 0	C. L. Mottram, Magpie-road (accepted)	229
Coker	266 3		

[Quantities not taken.

CROYDON.—For alterations and additions to Shaftesbury House, Lansdowne-road, Croydon. Mr. William Bevan, architect, 103, George-street, Croydon:—

Smith & Sons	£577 0	W Nottle	£490 0
Bulled & Co.	497 0	Holt & Sons (accepted)	425 0
A. Bullock	490 10		

DUDLEY.—For new schools at Eve Hill, Dudley, for the Dudley School Board. Mr. Robert F. Matthews, architect, Birmingham. Quantities by the architect:—

Bishop & Sons	£6,500	William Willetts	£7,287
Marsh Bros.	8,130	T. Rowbotham	7,250
Merton Hughes	7,721	R. Fenwick	7,225
Dorse & Co.	7,600	Lane Bros.	7,077
H. Golding	7,580	Harley & Sons	7,075
Henry Gough	7,395	Whittaker & Co.	7,060
G. H. Marshall	7,387	John Dallow	6,950
Webb & Round	7,350	Crisp & Co.	6,750
John Guest & Sons	7,300	J. Jones & Sons, Sedgley*	6,500

* Accepted.

EASTWELL.—For new rectory, Eastwell, near Ashford. Mr. R. P. Day, architect:—

C. Howland	£2,861 13	J. J. Wise	2,571 0
W. G. Peters	2,687 10	W. H. Bourne	2,485 0
H. B. Wilson	2,656 0	R. M. & H. Whiting*	2,260 0

* Accepted.

HAYWARD'S HEATH (Sussex).—For alterations, &c., to mortuary and post-mortem room at the East Sussex County Lunatic Asylum. Mr. Henry Card, County Surveyor, County Hall, Lewes:—

J. R. Hunt	£158	P. Peters, Horsham*	£141

For alterations to drains to separate sewage and rain-water, as per schedule of prices.

Bostel Bros.	10 per cent. above schedule prices.
H. J. Smith	9 " " " "
Wm. Piper	5 " " " "
J. R. Hunt	nett at schedule prices.
P. Peters, Horsham*	5 per cent. below schedule prices.

* Accepted.

HIGHCLIFFE (Hants).—For erecting new stabling at the "Globe" Hotel, Highcliffe, for Mr. J. Shuttleworth. Messrs. Lawson & Donkin, architects, Bournemouth:—

F. J. Luxton	£533 0 0	Entwistle & Cox	£456 0 0
George & Harding	499 9 9	G. Pope	455 13 6
W. Hoare	476 0 0	W. J. Lucas	449 0 0
M'William & Sons	475 0 0	W. J. Chinchen	440 0 0
W. Howe	460 15 6	Frampton & Son	418 0

HOUNSLOW. — For making-up and sewering Worpal-road, Talbot-road, Napier-road, Steele-road, Eve-road, and Honeywood-road, for the Heston and Isleworth Local Board. Mr. J. H. Strachan, Engineer and Surveyor :—

Jackaman & Sons	£5,632 12 0	T. Adams	£4,500 6 6
Fry Bros.	5,610 11 10	Mowlem & Co.	4,215 0 0
J. Ball	4,876 8 11	S. Hudson	4,118 11 7
Wimpey & Co.	4,724 9 3	R. Ballard	4,083 8 7
J. Jackson	4,684 0 0	W. H. Wheeler, Southwark*	4,019 2 4
G. Bell	4,595 18 6		

* Accepted.

[Surveyor's estimate, £4,125.]

HOUNSLOW.—For making-up and sewering Haliburton-road, Northcote-road, Newry-road, and Heron-road, for the Heston and Isleworth Local Board. Mr. J. H. Strachan, Engineer and Surveyor :—

Jackaman & Son	£4,288 0 0	Wimpey & Co.	£3,192 11 0
Fry Bros.	4,054 3 11	S. Hudson	3,103 0 0
J. Ball	3,538 6 7	Mowlem & Co.	3,101 0 0
T. Adams	3,354 3 2	R. Ballard	2,975 9 2
J. E. Broderick	3,334 18 8	W. H. Wheeler, Southwark*	2,760 7 6
J. Jackson	3,305 0 0		
G. Bell	3,222 4 0		

* Accepted.

[Surveyor's estimate, £2,928.]

HOUNSLOW.—For making-up and sewering Bulstrode-road, Montague-road, Queen's-road, and York-road, for the Heston and Isleworth Local Board. Mr. J. H. Strachan, Engineer and Surveyor :—

Jackaman & Son	£4,557 14 0	T. Adams	£3,540 18 1
Fry Bros.	3,876 15 3	Mowlem & Co.	3,411 0 0
Wimpey & Co.	3,719 9 3	S. Hudson	3,393 19 10
J. Jackson	3,665 0 0	R. Ballard	3,313 1 11
G. Bell	3,541 3 1	J. Ball, Chiswick*	3,154 3 1

* Accepted.

[Surveyor's estimate, £3,325]

HOUNSLOW.—For making up and sewering Holloway-road, Prince Regent's-road, Star-road, Temple-road, Upton-road, Anderson's-place, and Gordon-road, for the Heston and Isleworth Local Board. Mr. J. H. Strachan, Engineer and Surveyor :—

Jackaman & Son	£4,039 0 0	T. Adams	£3,294 15 3
Fry Bros.	3,788 6 5	J. Jackson	3,167 0 0
J. Ball	3,546 0 0	Mowlem & Co.	3,115 0 0
G. Bell	3,363 2 10	S. Hudson, Streatham-hill*	3,052 5 0
R. Ballard	3,306 19 10		

* Accepted.

[Surveyor's estimate, £3,200.]

LONDON.—For alterations and additions at the Headquarters of the Tower Hamlets Rifle Brigade. Professor Banister Fletcher, architect :—

Mowlem & Co.	£2,393	Colls & Sons	£1,945
H. J. Williams	1,987	Burman	1,883
Perry & Co.	1,977	W. Shepherd (accepted)	1,873

LONDON.—For re-paving Carr-street, for the Limehouse Board of Works. Mr. C. Dunch, Surveyor :—

W. H. Wheeler, Sumner-street, Southwark.*

* Accepted at schedule of prices.

LONDON.—Accepted for kerbing, channelling, and making up Dulwich Park Grove, for the Camberwell Vestry. Mr. J. Brown, Surveyor :—

W. H. Wheeler, Sumner-street, Southwark ... £1,146 13 2

LONDON.—For making up Marlborough-road, Bowes Park, Wood Green, N., prior to its adoption by the Wood Green Local Board. Messrs. Pooley & Follett, Surveyors, 21, John-street, Adelphi, W.C. :—

Samuel Chafen	£1,550	Stephen Kavanagh	£875
Bennet Milward	952	William Nicholls	850
Thomas Adams	900	William Griffiths	849

LONDON. — Accepted for rebuilding 85, 86, and 87, Lower Thames-street, E.C., at the corner of St. Dunstan's Hill. Mr. Delissa Joseph, architect, 17 and 18, Basinghall-street, E.C. :—

Constructional Ironwork.

Messrs. Drew, Bear, Rownson, & Perks ... £166

Portland and Bath Stone.

J. Lear ... £138 10

LONDON.—For 100 cast-iron gulley-tanks, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer :—

Safety Tread Co.	£3 19 0	Richards & Sons	£2 1 6
J. Hall & Son	3 14 0	Swinden & Co.	2 1 0
Wood's Patent Engine Co.	3 2 0	Daniel Clark	2 0 0
Weeks & Son	3 0 0	Stanton Iron Works	1 19 1
Cartwright Mead	2 19 0	J. Gibb & Co.	1 19 0
Falkirk Iron Co.	2 16 6	Sharpe & Co.	1 19 0
S. Lund	2 16 6	Hampton & Co.	1 18 10
Birtley Iron Co.	2 15 6	F. Bird & Co.	1 18 9
J. Mackerell	2 12 6	E. Wooley	1 18 6
W. Allen	2 11 6	Jukes, Coulsen, & Co.	1 18 3
E. & F. Wright	2 10 0	M. & W. Grazebrook	1 18 0
Durham Bros.	2 10 0	Ceres Iron Co.	1 18 0
G. Waller & Co.	2 7 6	Badham & Co.	1 17 0
A. Barnes & Co.	2 7 6	Higgins Bros.	1 17 0
Williams & Co.	2 5 0	Hollom & Co.	1 17 0
Clapham Bros.	2 4 9	Collis & Stace	1 16 9
Tees Side & Engine Works Co.	2 4 0	J. C. & J. S. Ellis	1 16 6
Newton, Chambers & Co.	2 2 0	F. Morton & Co., Westminster (accepted)	1 11 10

LONDON.—For erecting a removable platform at the Hornsey-road Baths, N. Mr. A. Hessell Tiltman, architect. Quantities not supplied :—

Avenell & Hine	£630	Spencer & Co.	£449
Yerbury & Sons	490	Lascelles & Co.	439
White & Son	475	Seath & Harris	430
Buckeridge Bros.	470	Chinchen	397
Macfarlane Bros.	462	Knight & Sons	347
Barrett & Power	462		

NEW TREDEGAR (Mon.).—For widening, &c., School-street, for the Bedwellty Local Board. Mr. J. H. Lewis, C.E., New Tredegar, *via* Cardiff :—

Thomas Jenkins	£248 17 8
W. Williams & Sons, New Tredegar, *via* Cardiff (accepted)	138 10 0

WALSALL.—For the execution of street works, Marlow-street, &c., for the Corporation :—

	Street works.	Sewer.
Geo. Law, Kidderminster	£467	£49

WALTHAMSTOW.—For additions to school buildings, Markhouse-road, for the School Board, Mr. W. A. Longmore, architect, 7, Great Alie-street, Whitechapel, E. :—

T. White & Co.	£623 0 0	E. J. English	£495 0 0
Barrett & Power	539 0 0	Morrison & Goodwin	489 9 6
R. & E. Evans	509 0 0	Lawrence, Waltham*	440 0 0

* Accepted.

[Architect's Estimate, £535.]

WELLINGBOROUGH.—For alterations, &c., to buildings at the sewage farm, Irthlingborough Grange, for the Local Board. Mr. Edward Sharman, surveyor, Market-square, Wellingborough. No quantities :—

Robert Marriott	£165 0	George A. Smith*	£113 15
Hacksley Bros.	135 0		

* Accepted.

[All of Wellingborough.]

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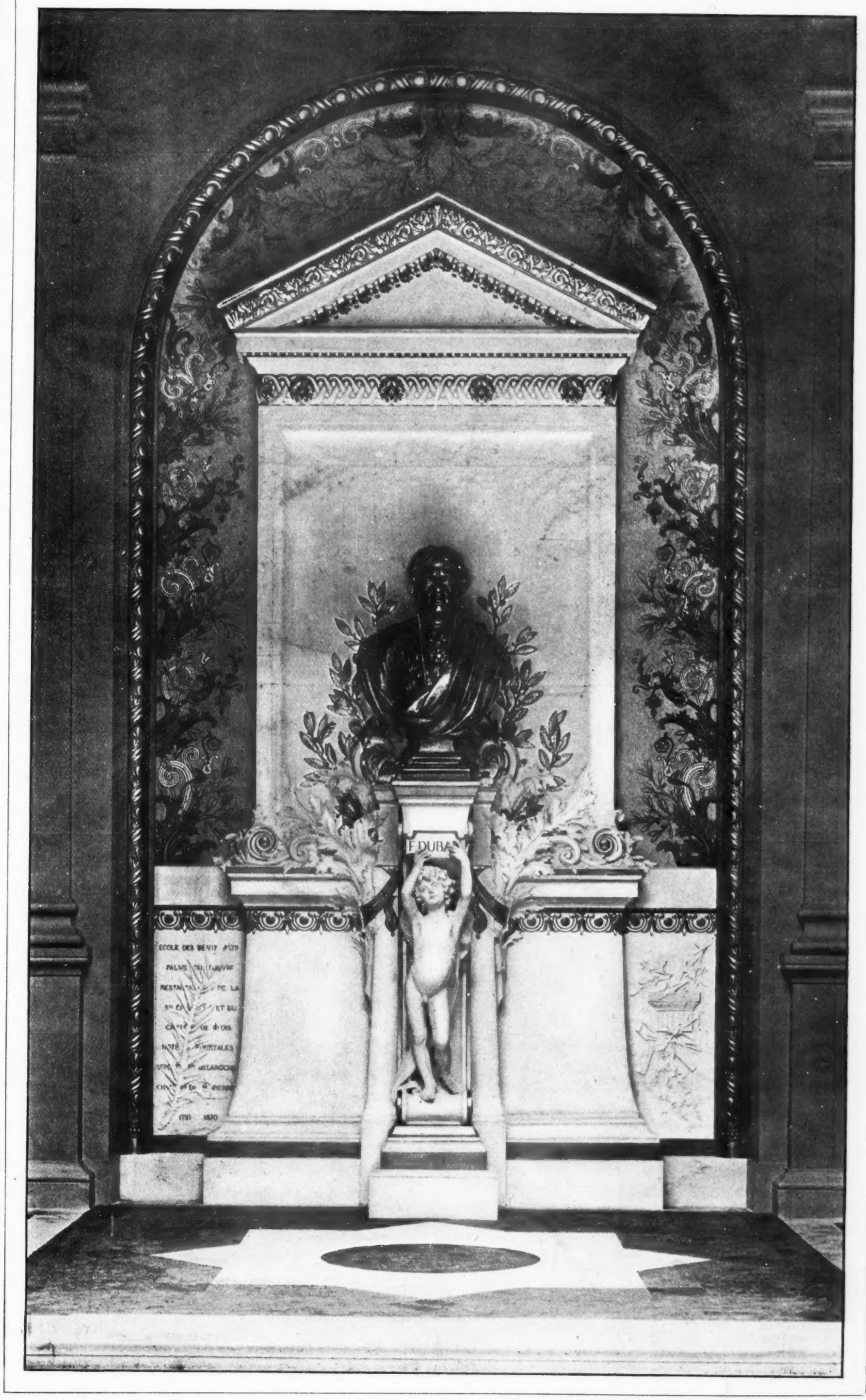
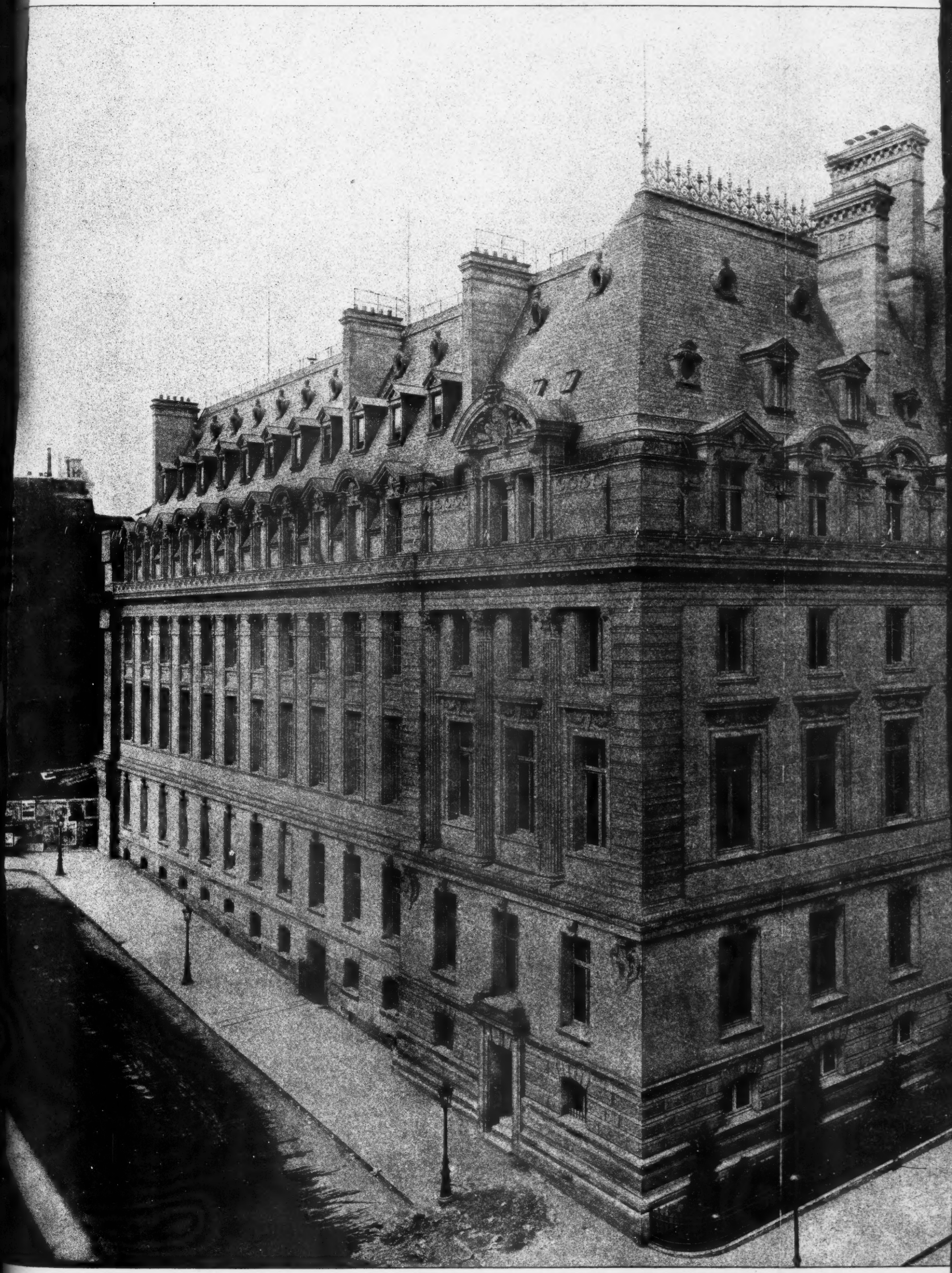


MONUMENT TO DUBAN, AT THE ÉCOLE DES BEAUX-ARTS, PARIS.

M. E. GUILLAUME, SCULPTOR; M. BERNIER, ARCHITECT.



THE NEW SORBONNE, PARIS.—M. NENOT, A

EXTERIOR VIEW.

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NNE, PARIS.—M. NENOT, ARCHITECT.

EXTERIOR VIEW.

THE NEW SORBONNE, PARIS.—M. NENOT.

THE LARGE THEATRE.

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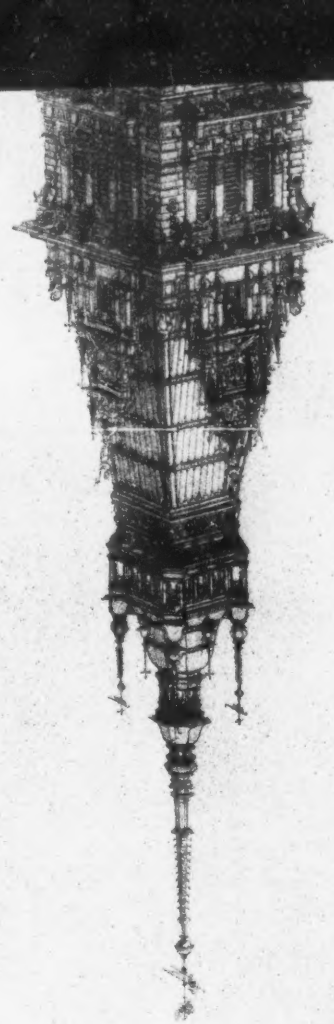
E, PARIS.—M. NENOT, ARCHITECT.

ARGE THEATRE.



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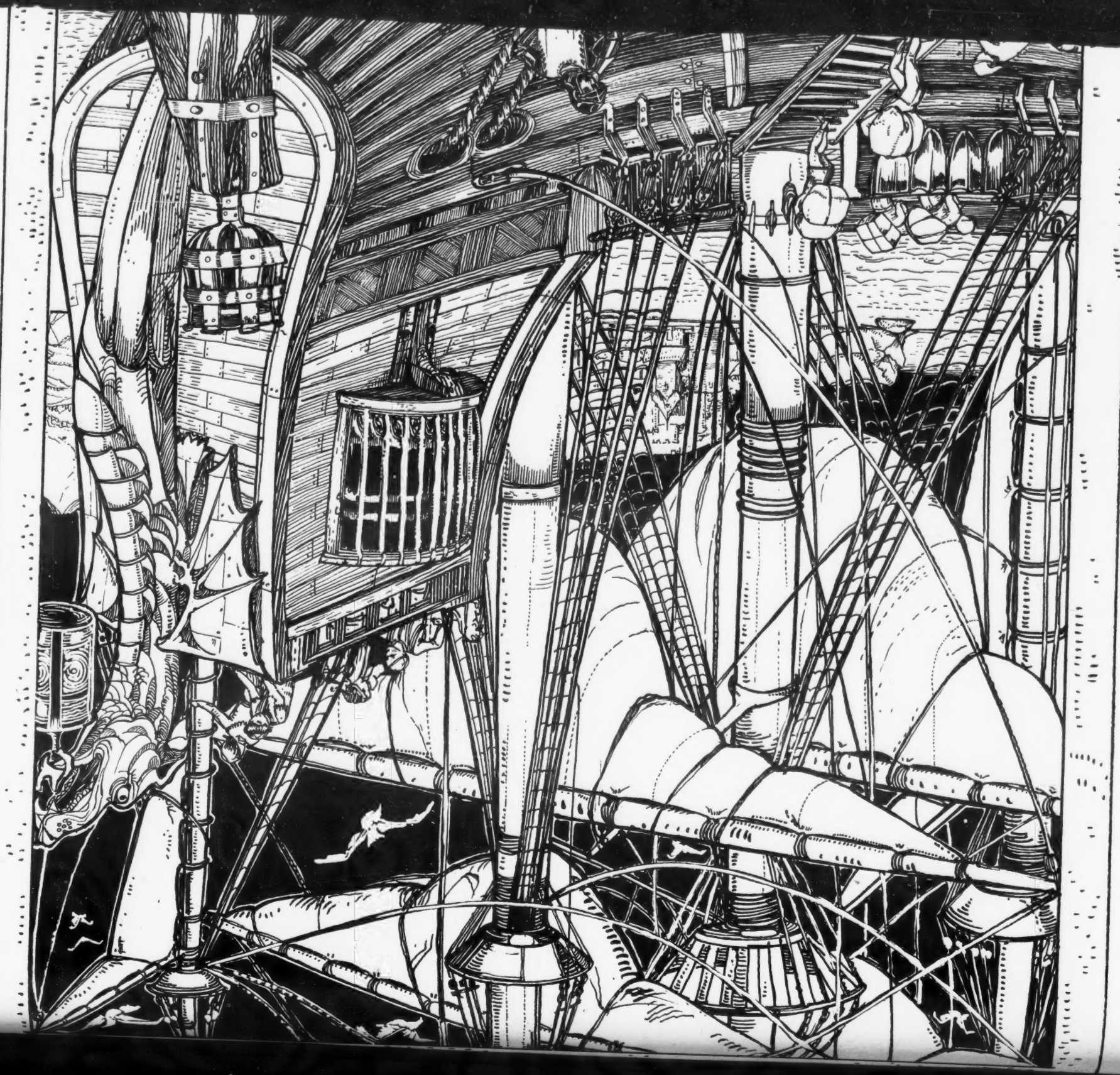
JOINT ARCHITECTS: MESSRS. GROTJAN, HALLER, HANSSEN, HAUERS, MEERWEIN, STAMMANN, AND ZINNOW.



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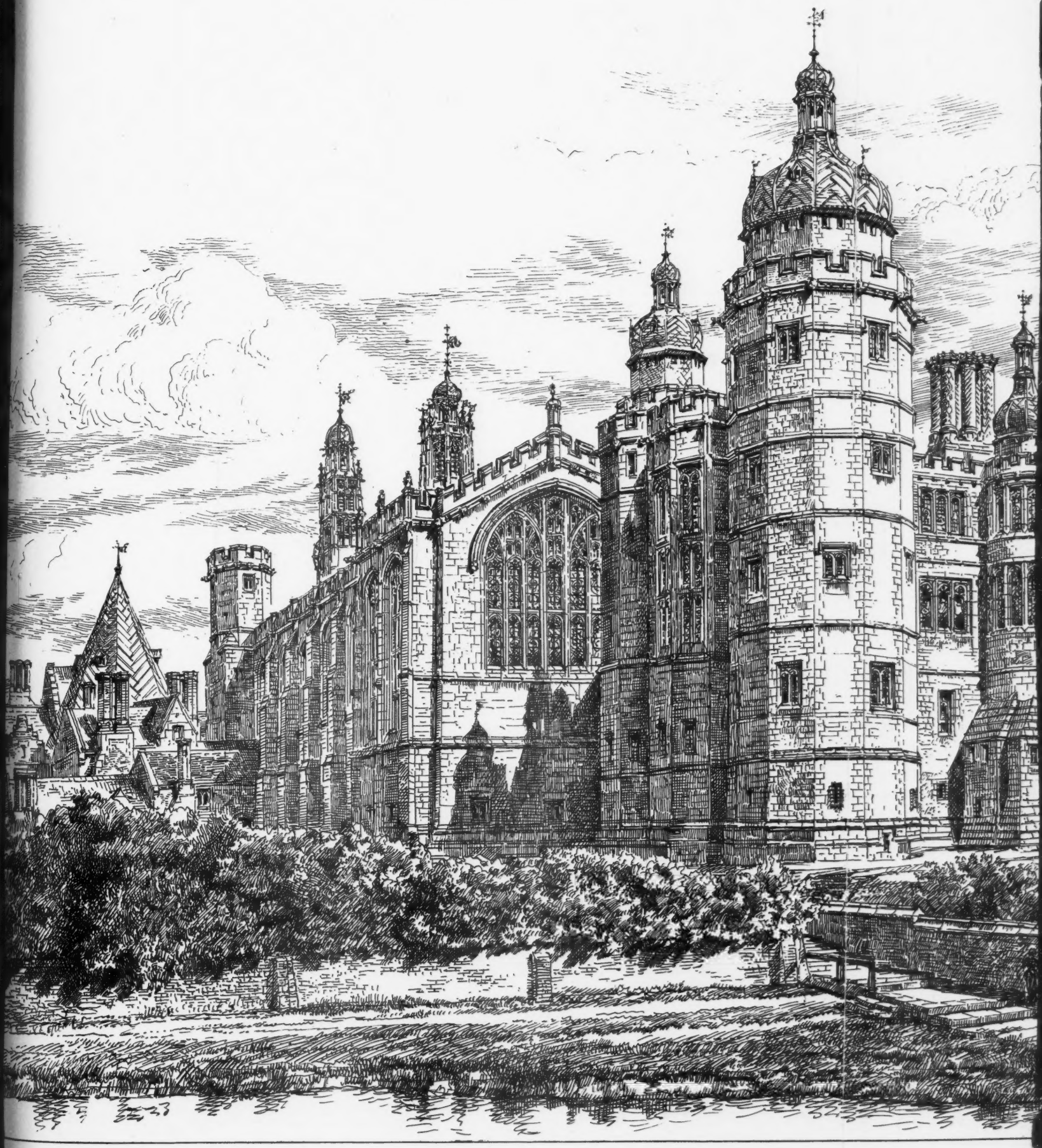
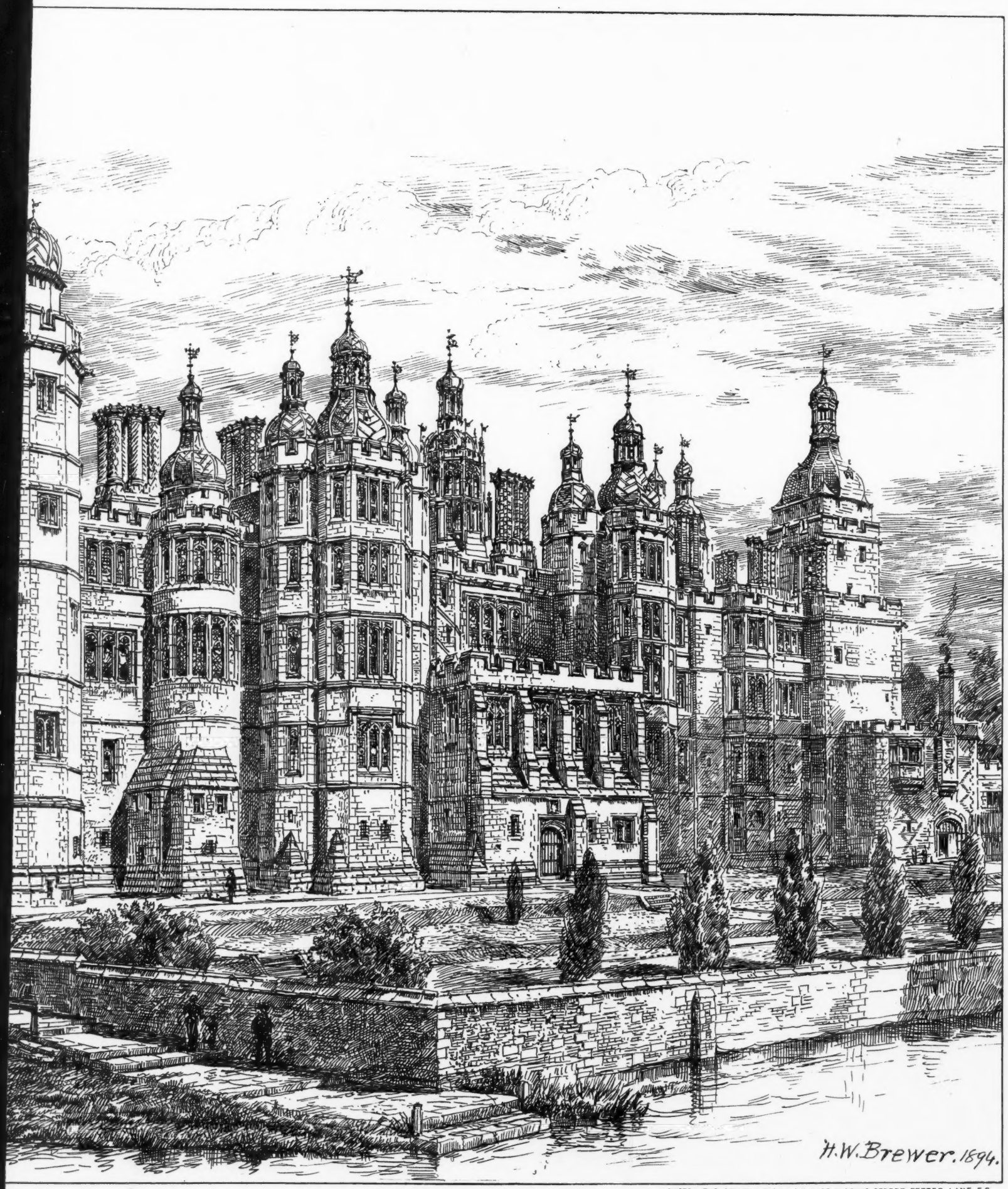


THE "LIVERIE KITCHEN." CLOCK TURRET. GREAT HALL. WITHDRAWING ROOM. THE "CANTED TOWER."

RICHMOND PALACE (ABOUT 1649): A REST



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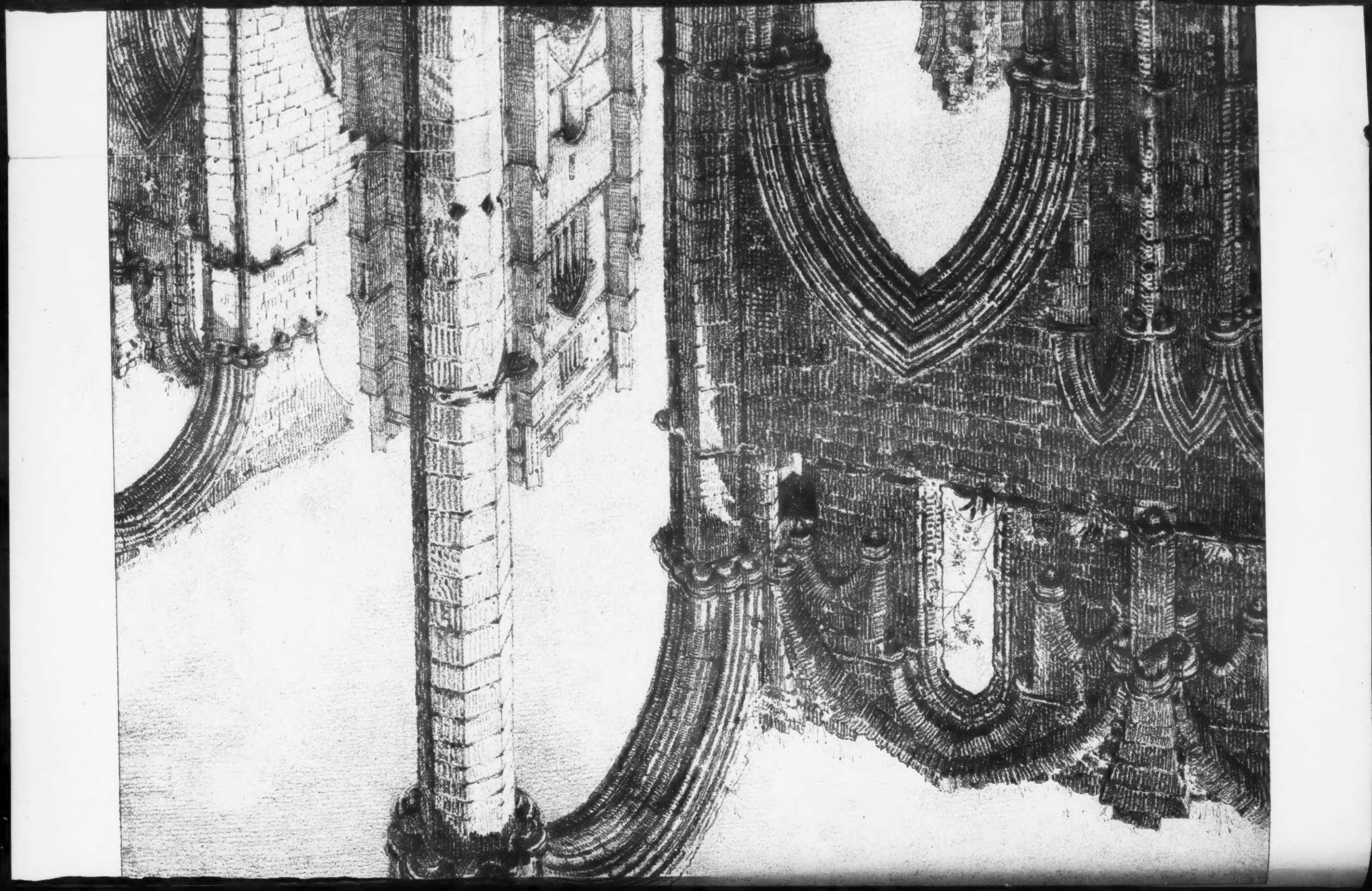
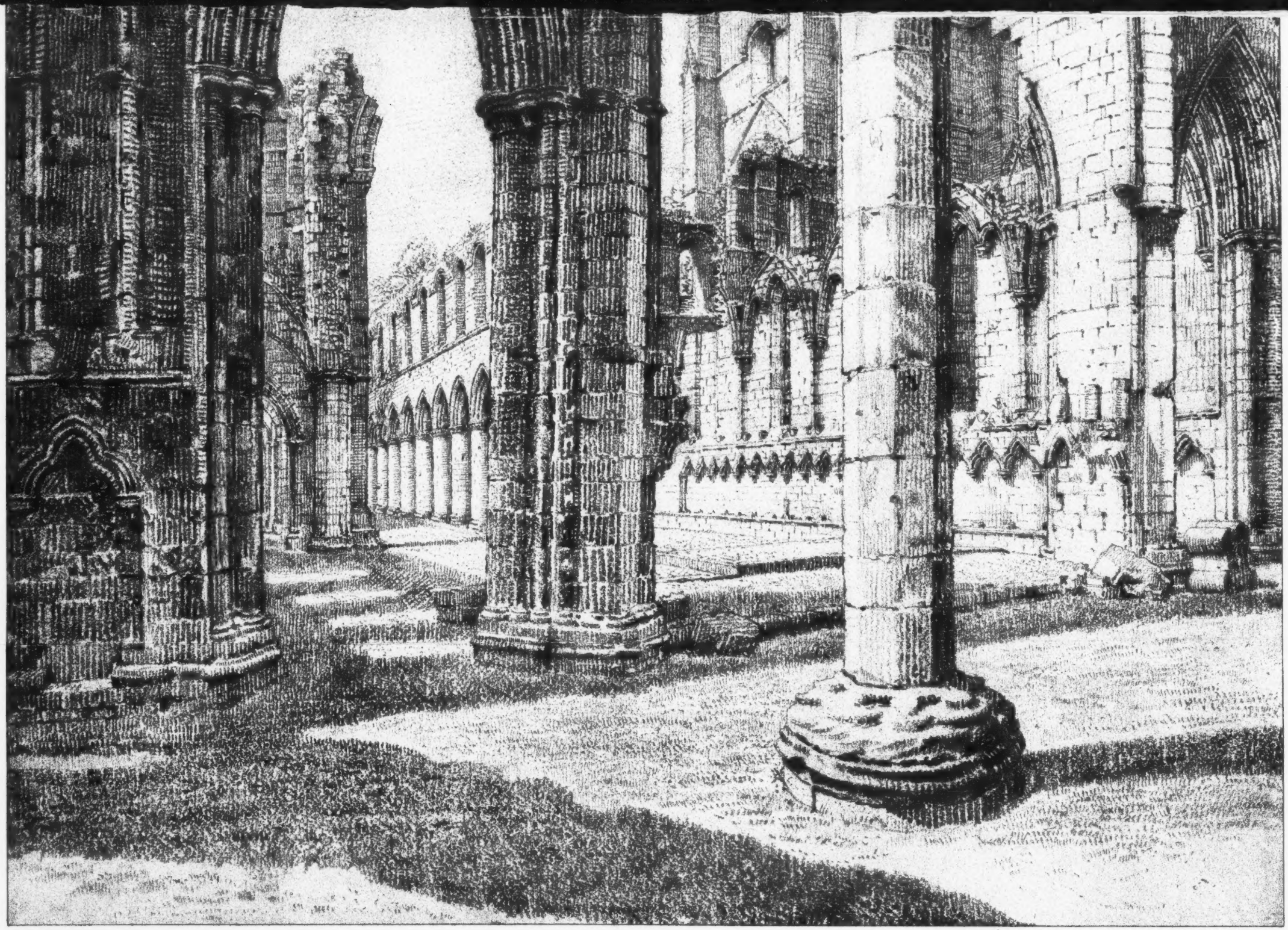
ER." THE PRIVY APARTMENTS. "THE LANTHORN." "THE LOBBY." THE PRIVY KITCHEN (?) "THE FRIARS."

ACE (ABOUT 1649): A RESTORATION.





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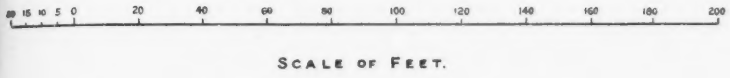
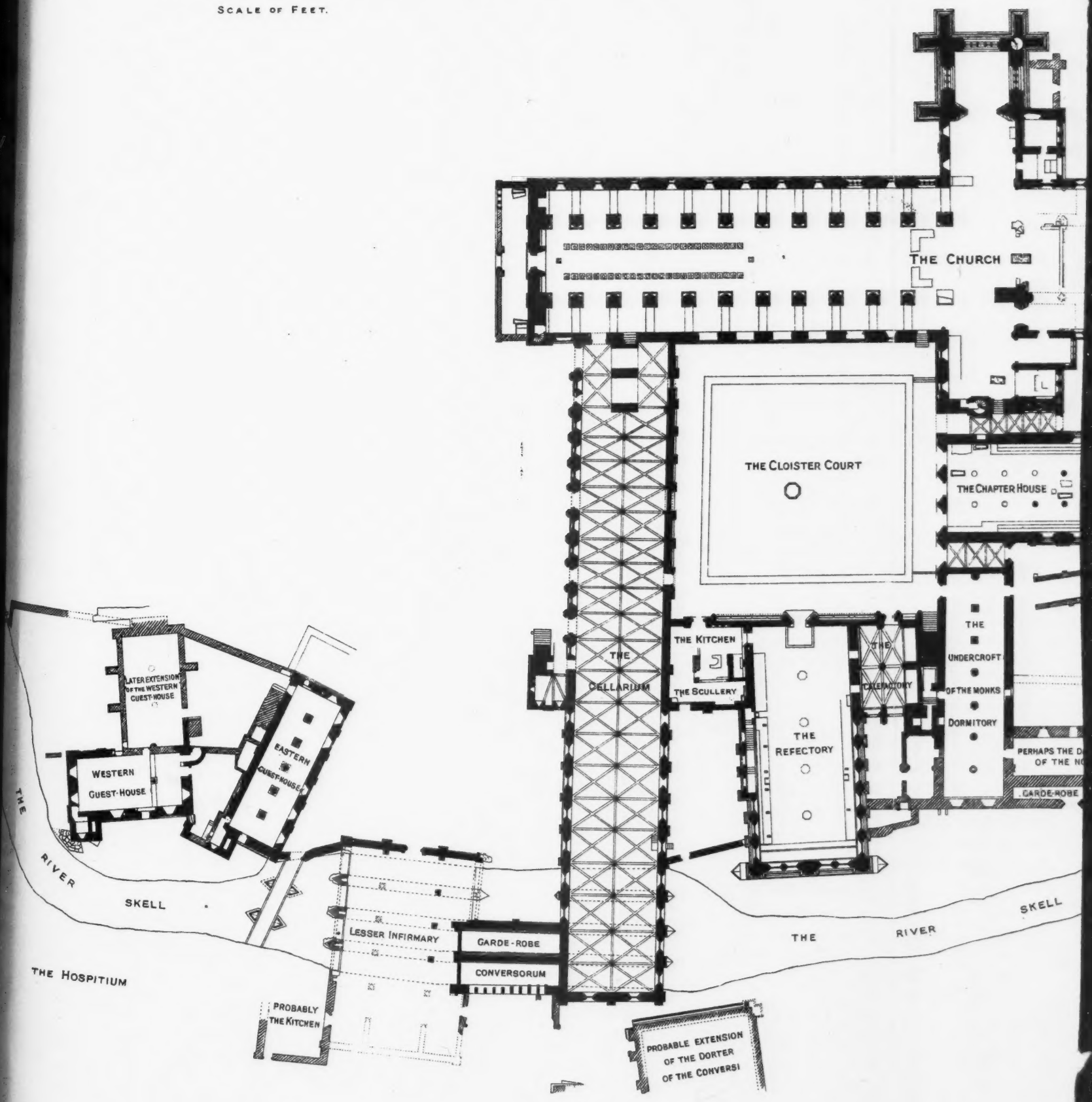
THE ABBEYS OF GREAT BRITAIN.—No. 8. FOUNTAINS.

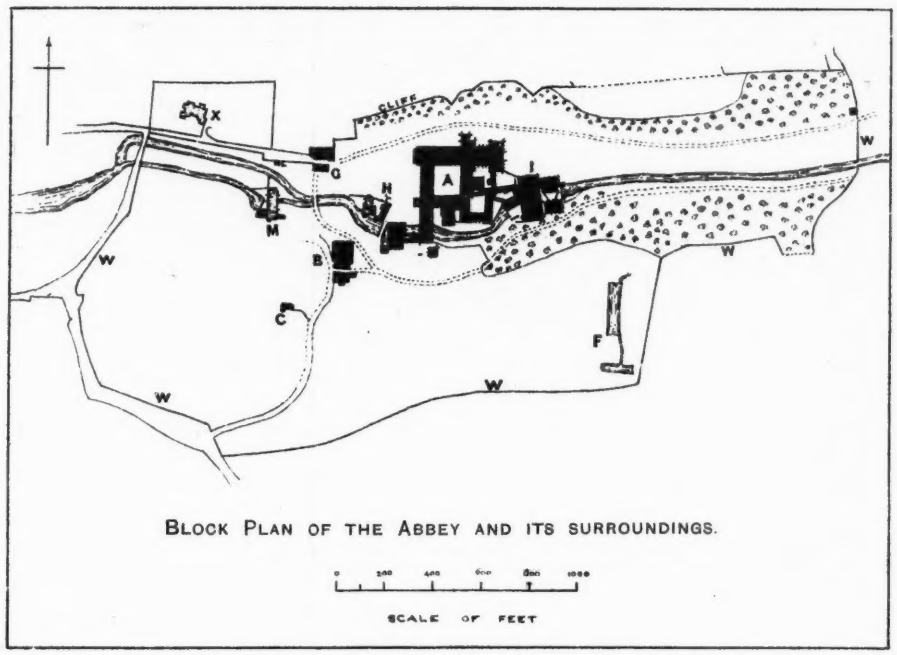
Drawn by Mr. J. A. Slater

FOUNTAINS ABBEY.

GENERAL PLAN.



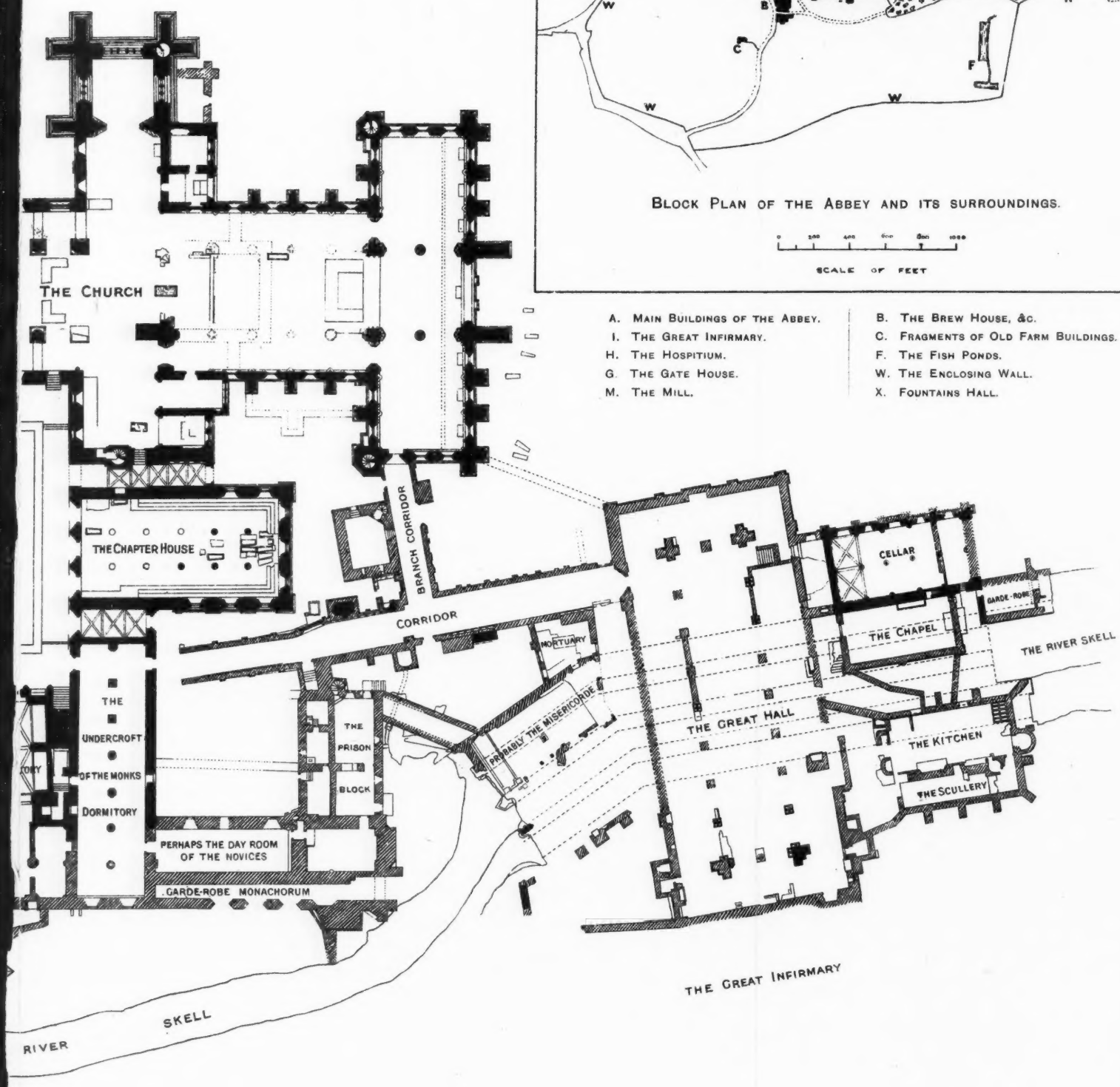




BLOCK PLAN OF THE ABBEY AND ITS SURROUNDINGS.

A. MAIN BUILDINGS OF THE ABBEY.
I. THE GREAT INFIRMARY.
H. THE HOSPITIUM.
G. THE GATE HOUSE.
M. THE MILL.

B. THE BREW HOUSE, &C.
C. FRAGMENTS OF OLD FARM BUILDINGS.
F. THE FISH PONDS.
W. THE ENCLOSING WALL.
X. FOUNTAINS HALL.



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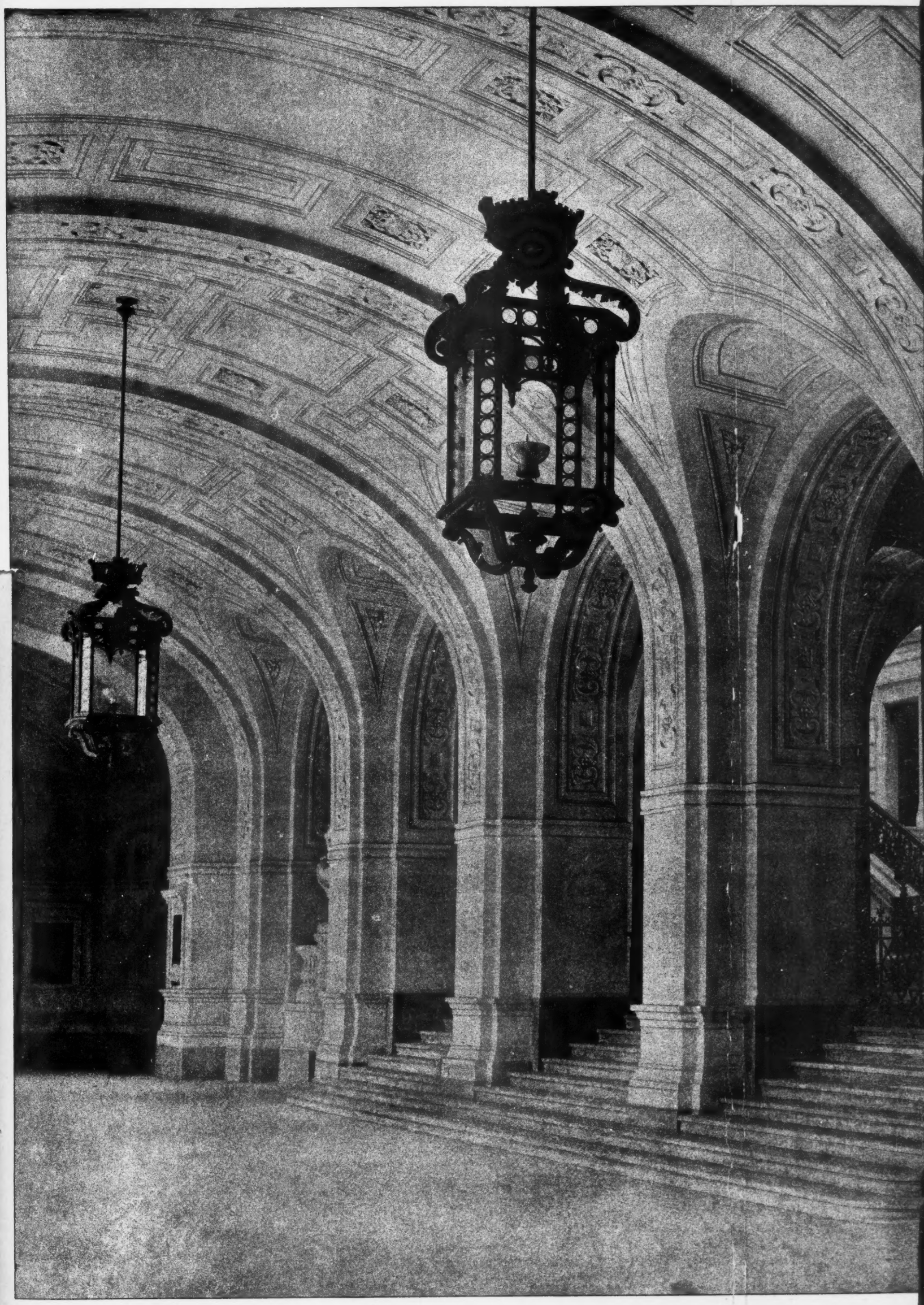
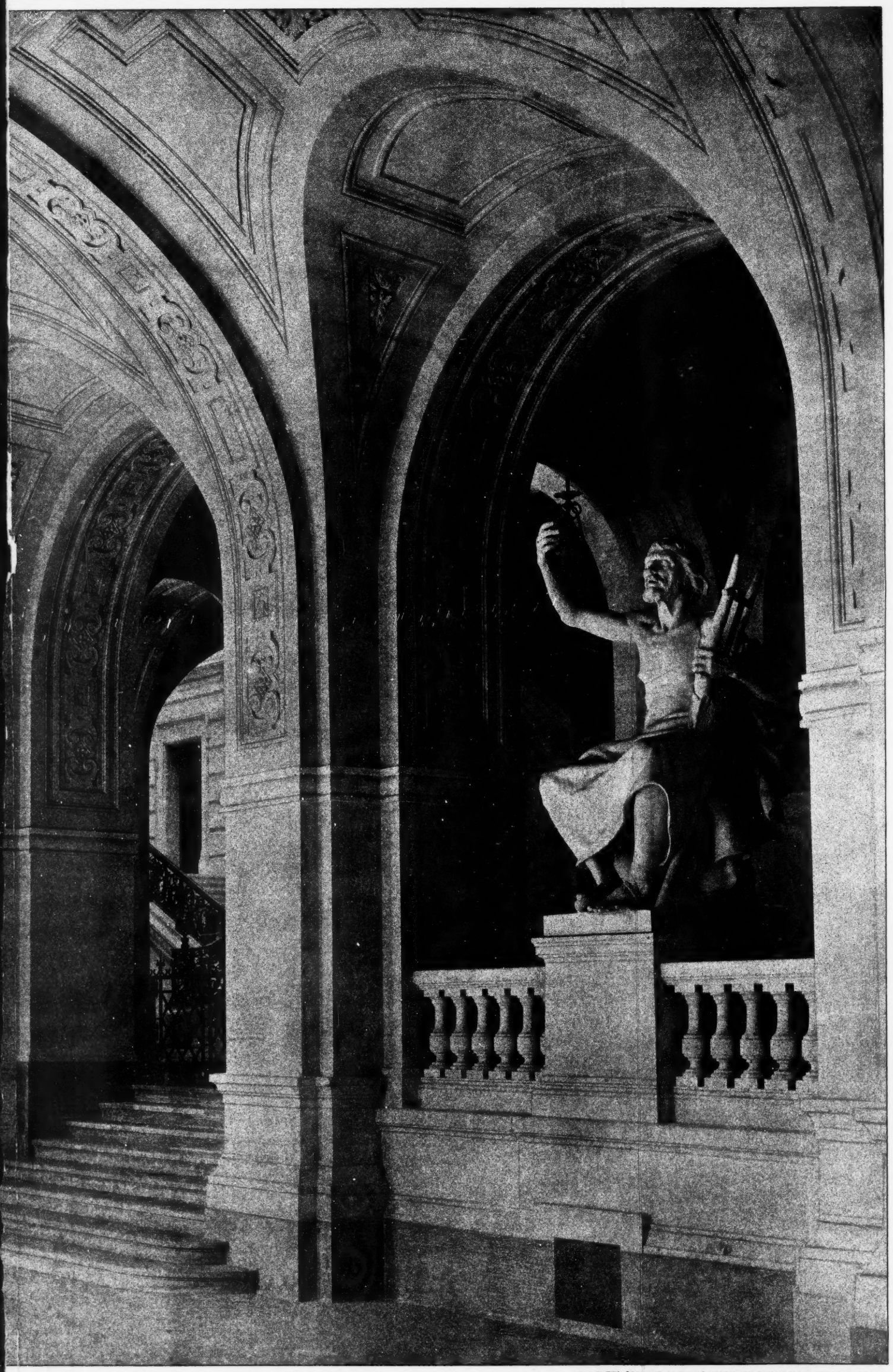


THE NEW SORBONNE, PARIS.—M. Nenot, A

VESTIBULE OF THE GRAND STAIRCASE.



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BONNE, PARIS.—M. NENOT, ARCHITECT.

LE OF THE GRAND STAIRCASE.